NOVEMBER, 1953

Traffic Engineering

New Overhead Signing Used On Boston Parkway

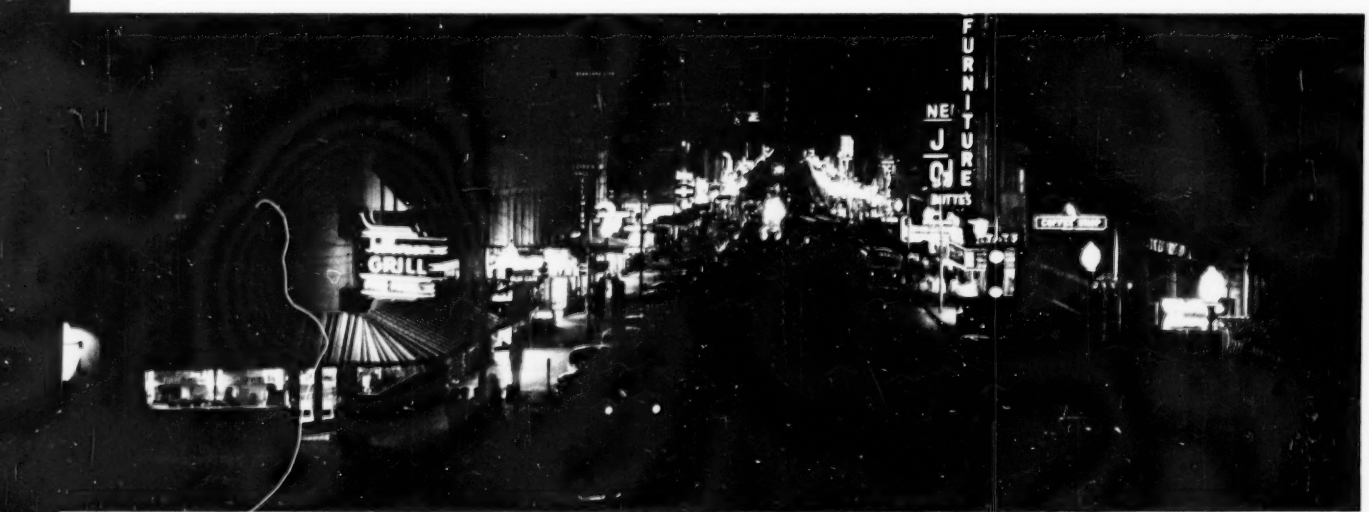
- James J. Storrow Parkway
- Driver Characteristics and Highway Operation
- Shopping Centers
- Redevelopment and Traffic

Official Publication of the Institute of Traffic Engineers

CRIME AFTER DARK, which flourishes on poorly lit streets, spurred the drive for better lighting. The City Council studied the new modernization plans to provide more effective lighting.

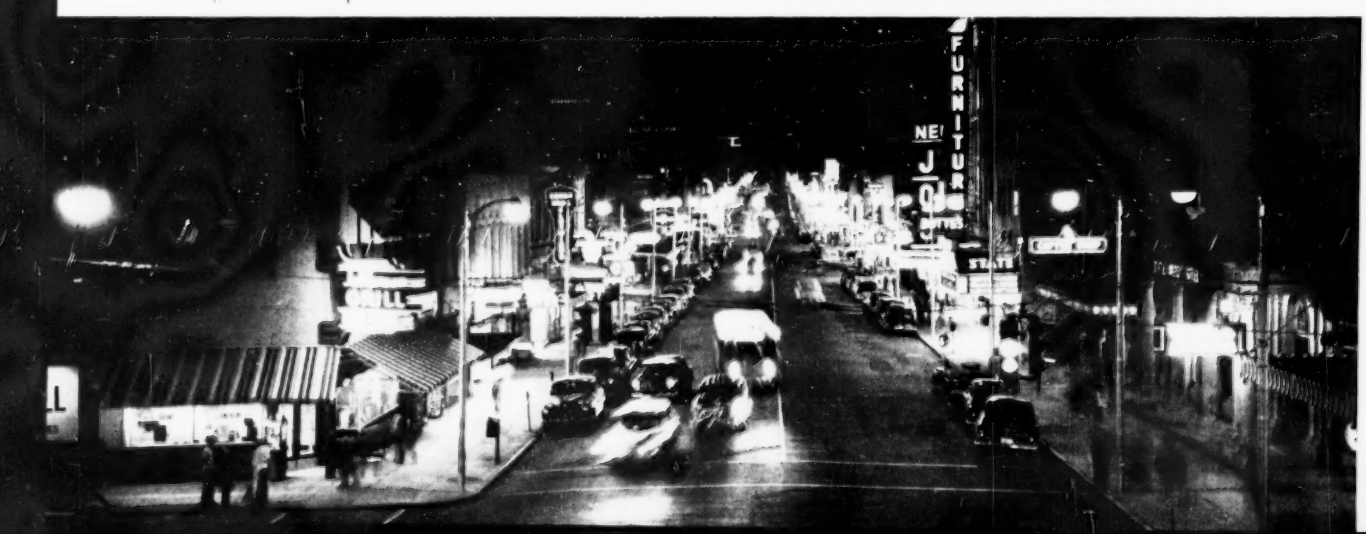
CITY ACTS with a new relighting program for its 100,000 citizens. Mississippi Power and Light Company installed new lights on main streets after planning program with the City Council.

JACKSON THROWS LIGHT ON

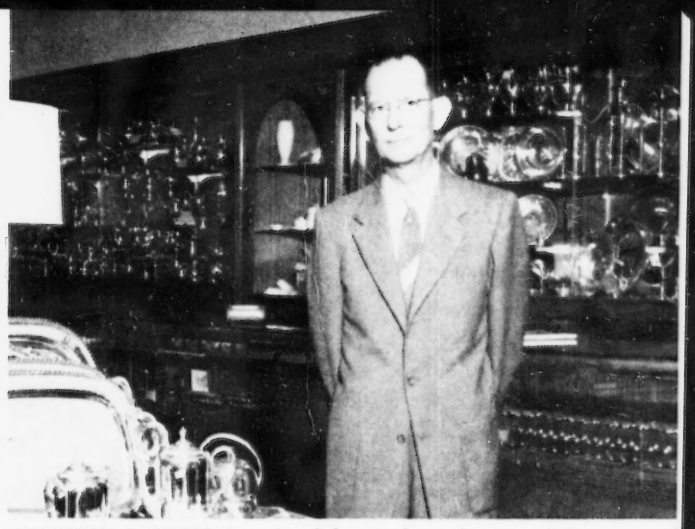


DARK STREETS before relighting (above) were often hazardous for drivers and pedestrians. Criminals molested the late strollers, damaged or entered parked cars, and broke store windows.

SAFE STREETS after relighting (below) sharply cut traffic injuries, eliminated the traffic fatalities, and helped police reduce crimes. Traffic moved faster and business was increased.



PLEASED CITIZENS of Jackson like the increased safety provided by the new street lighting. Pedestrians no longer fear criminal attacks, and now feel safer walking or shopping at night.



INCREASED BUSINESS is enjoyed by retail merchants such as jeweller J. T. Stallings, who says, "Lighting increases sales, aids our window displays, and draws in new trade from beyond our city."

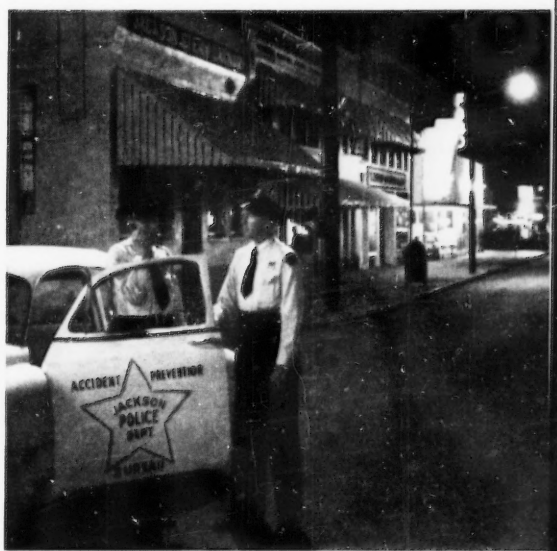
CRIME AT NIGHT

WINS AAA PEDESTRIAN SAFETY AWARD

Jackson, Mississippi has proof of what good street lighting can do to improve a city. Crimes at night have been virtually eliminated on the relighted streets. The new lighting has helped reduce traffic accidents so that not one fatality or injury occurred on these streets in 1952. Business has prospered with merchants reporting increases up to 20% in sales.

The relighting program for Jackson was inspired by the desire to become the "safest city in the nation." The American Automobile Association awarded Jackson a special citation for its record of no pedestrian injuries or fatalities for cities in the 50,000–100,000 population class in 1951.

According to Chief of Police, W. D. Rayfield: "Crime on the city streets has almost disappeared since relighting. The visibility is so fine, that our men can spot a fly moving three blocks away!" And Fire Chief L. F. McDonald says that his equipment can now move faster and more safely to safeguard life and property. The Mayor of Jackson, Allen C. Thompson said, "Installation of new street lights is one of the most important steps we have ever taken to make the city safe and pleasant for its citizens and those from surrounding areas. It has assisted the police and fire departments in their vital work and is making Jackson look more progressive and more prosperous." The relighting program in Jackson is now continuing through the remainder of the city streets.



PROPERTY IS SAFER since new street lights were installed. Police and Fire Departments can get to the scene faster and work more efficiently.

MAYOR Thompson and Rex Brown, President of Mississippi Power and Light Co., are proud of the AAA recognition of Jackson's traffic safety.

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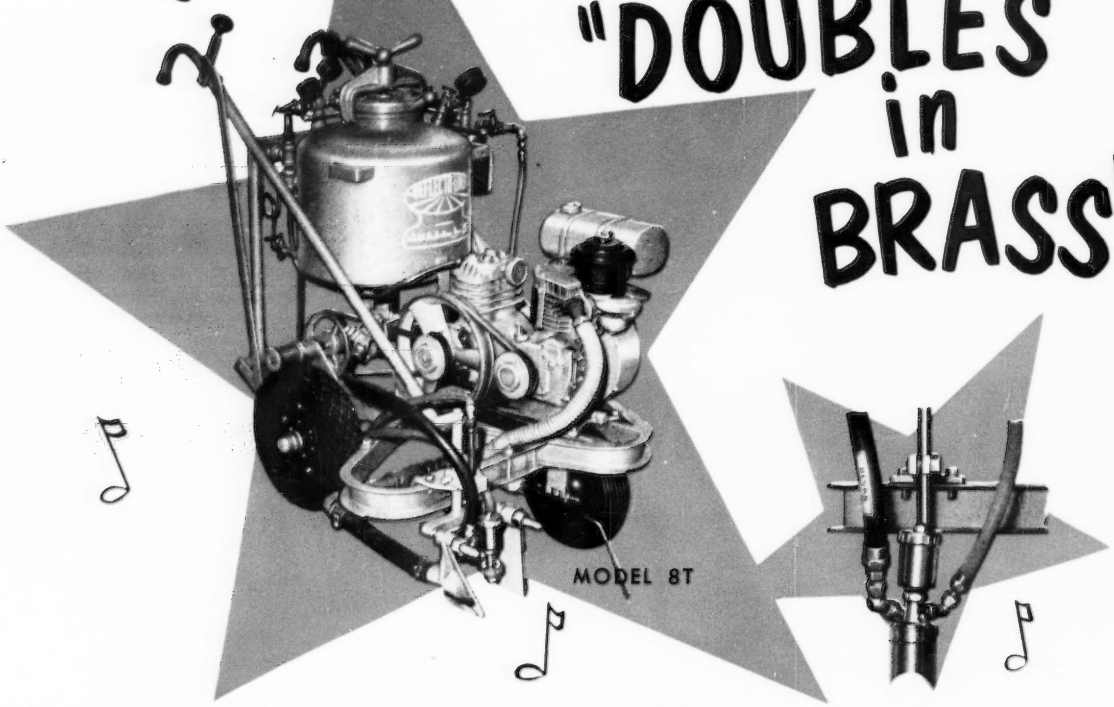

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXIV | NOVEMBER, 1953 | NUMBER 2

COVER: All of the signs used on the James J. Storrow Memorial Parkway in Boston, Massachusetts, are overhead, mounted on a new type of sign-supporting structure. By employing overhead signs many important driver benefits are realized. These signs give the driver greater sight distance, complete, accurate directions, and make a good appearance on the Parkway itself. The fifty signs supported on fifteen steel tubes have caused many favorable comments on the part of Parkway users. The Boston highway handles nearly 44,000 cars a day.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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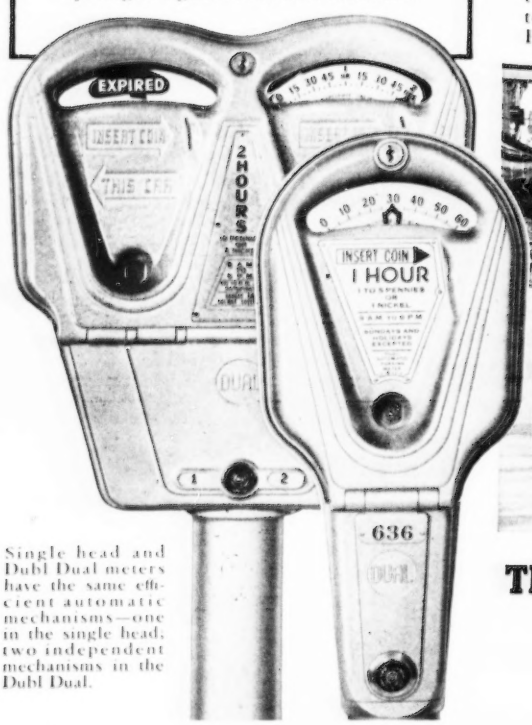

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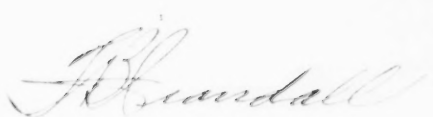
Frankly Speaking

NEWS ITEM, "Three killed, two seriously injured in collision at intersection of Main Highway and County Road to Podunk." Following the tragic mishap an aroused citizenry casts about in a frenzied effort to place responsibility, frequently singling out the highway engineer for the role. A rational and objective investigation discloses that the mishap occurred at the intersection of a lesser arterial highway and a local road with readily visible stop signs on the latter. Failure to heed the stop sign was the prime causative factor as borne out by witnesses. The drivers involved were long time residents in the area.

Economic controls preclude development of freeway type facilities on the entire road network and portions of the system are not all that might be desired. Notwithstanding, it is a rare instance wherein the motorist is not fully apprised of conditions such that with a modicum of common sense and a bit of "straining" to think a little beyond the radiator cap, the accident toll would be measurably reduced. Even on high type freeway facilities incorporating the ultimate in design, the engineer has no way of controlling that segment of motorists who insist on driving at high speeds and short headways, which practice is nothing short of a loaded pistol.

Comparatively the engineer faces squarely up to his responsibilities in much better fashion than does a large majority of drivers; however, it will probably continue to be open season on engineers by those individuals looking for an alibi to cover their own shortcomings. Engineers will continue their efforts to protect even the foolhardy insofar as possible and count ten before launching on a verbal tirade of human beings, always mindful of the biblical remonstrance, "whosoever be without sin, let him cast the first stone."



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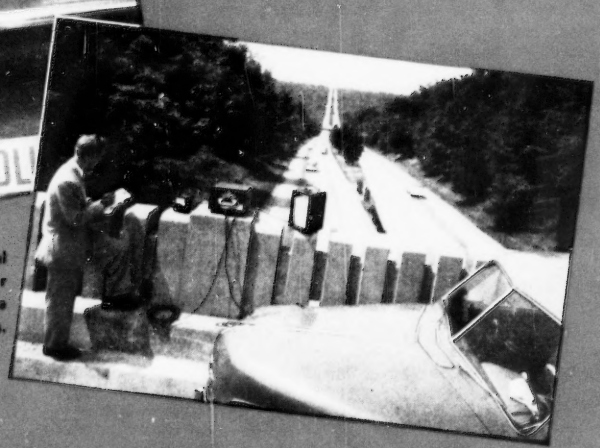

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New Overhead Signing Used on Boston Parkway

"The Signs Should Find the Driver. The Driver Should Not Have to Find the Signs."

By Edgar F. Copell (Mem. ITE)
President, Massachusetts Safety Council

ALL SIGNS on the James J. Storrow Memorial Parkway in Boston are overhead, mounted on a new type of sign-supporting structure. A total of 50 signs, with Stimsonite reflectorized letters, are supported on 15 simple, attractive and sturdy structures of steel tubing. These tubings put signs up where visibility is good, at a cost no greater than that of roadside signing. The signs use the white letters on a dark green background employed on many of the nation's most modern highways.

The Parkway runs alongside the Charles River from Boston University Bridge to downtown Boston, carrying nearly 44,000 cars a day, and is a project of the Metropolitan District Commission, Commonwealth of Massachusetts.

In the application of the overhead sign system, three basic reasons were used as the criterion to best meet the Parkway's requirements: 1) They can be seen from a greater distance than roadside signs of the same size. 2) They can't be blocked by some vehicles from other vehicles' view. 3) An overhead sign usually can be placed directly over the lane to which its legend refers.

The placing of signs in the most logical position—over the lanes to which they refer—has the added advantage of making it possible to give completely understandable directions with a minimum legend. And it permits use of vertical arrows, the most understandable direction indicators. These advantages are particularly important on expressways, where they give the driver safety and convenience in reading the signs while traveling at high speeds.

Another factor was particularly important on the Storrow Parkway: with these structures, overhead signing requires less right-of-way width. The cost of acquiring right-of-way for any urban project is considerable. In this case it was particularly important. The width is limited on one side by the Charles River, and on the other side for most of its length by apartment buildings fronting on exclusive Beacon Street. The potential cost of acquiring buildings in the area would have been extremely high. Thus in many places shoulders had to be too narrow to include both trees or shrubs and unobstructed signs. The center divisional plot is often only four feet wide, too narrow for placing suitable signs there. Under such conditions, which occur frequently in urban construction, the only alternative to overhead signing is inadequate signing.

The objection to previous overhead signing has been the expensive and unsightly supports used: fabricated open truss structures. For the Storrow Parkway, the Metropolitan District Commission, in cooperation with Union Metal Manufacturing Co., Canton, Ohio, developed a new type of structure with steel tubing columns and crossbeams.

The supports are made of Union Metal's Monotube. This is made from hot-rolled steel plate rolled into a tube and welded along the longitudinal joint. The tube is then placed on a mandrel and cold-rolled to give it increased physical properties, and to impart a taper.

The columns are welded to ornamental cast steel bases, and taper toward cast steel caps on top. Beams are made of two tapered tubes welded together at their large ends, so that the beam tapers from its center toward each end. The joint is first butt-welded, then a steel ring is welded around the joint.

Beams are attached to columns by clamp fittings, which can be placed at any desired height above the roadway and drawn tight with bolts.

Most columns are made of 3-gage steel plate (0.2391 in. thick) and are 8 in. in diameter at the base. Some of the supports span the entire roadway and have a third column placed in the center divisional plot. These are of 0-gage plate (0.3125 in thick) and have 9-in. base diameters. Beams, depending on the span, are made from 0-gage, 3-gage, or 11-gage (0.1196 in. thick) plate. The expressway's widest single span is 44¼ ft.

The column bases are bolted to poured reinforced concrete foundations. These are about 3 ft. wide, 6 ft. long, and 4 to 5 ft. deep. Those for center columns are 8 ft. long. Above ground level is an integral concrete pier 18 x 24 in. and 12 in. high. A steel bearing plate is grouted to the pier. Four 1¼-in. bolts, 48 in. long, are cast into the foundation and extend up through the bearing plate for attaching the column base.

The structures are designed to withstand a wind force of 100 miles per hour, and the weight of a solid coat of ice an inch thick on signs and structure.

The signs were manufactured and erected by Standard Sign & Signal Co., Clinton, Mass., using Stimsonite cutout letters and numerals made by AGA Division, Elastic Stop Nut Corporation of America, Elizabeth, New Jersey. There are 50 signs in all, 46 traffic directional signs and four regulatory signs. They are made of ⅜-inch marine plywood bolted to frames of galvanized angle iron. They are 33¾ in. high, and as wide as the legend dictates. Steel directional arrows with Stimsonite reflectors are riveted to a steel plate which is attached to the backs of the directional signs and

Fig. 1
The author, Mr. Copell, and Captain William Mairley, Commanding Officer, Lower Basin Division, Metropolitan District Commission Police, inspect Parkway signs.

projects down 20 in. below them. On the section of the parkway open to trucks, the clearance below the arrow is 13½ ft. On the rest of the parkway it is 12 ft.

All signs have 10-in. letters and numerals, except one which has 12-in. letters. These are made of white-enameled corrosion-resistant steel, with Stimsonite all-plastic sealed reflectors. Stimsonite has a precise optical pattern which acts in effect like an automatic tilting mirror, in that it reflects a concentrated beam of light back at any source which can reach it. Thus the motorist continues to see a bright reflection as he moves toward a sign.

The sign backgrounds and support structures are painted green. Signs are tilted slightly from the vertical toward approaching traffic. The Stimsonite letters make them legible from at least 600 feet under average night conditions.

This overhead signing is not much if any more expensive than roadside signing. The supports are must less costly than the complex structures ordinarily used, and not much more expensive than poles and brackets for equivalent roadside signs.

Overhead signs reduce vandalism almost to zero, and because they receive no car splash, they require cleaning much less often than roadside signs. The Stimsoniste reflectors are made with the optical pattern sealed in the back where it can't catch dirt and grime. The exposed surface is smooth and thus virtually self-washing.

Since overhead signs can be read from a considerable distance, outpost signs giving warning of an approaching direction change, duplicated by signs at the point of change, are not necessary. Also, since one car cannot block another's view, duplicate signs on opposite sides of the road are not needed. Because of the savings due to reduced vandalism, cleaning, and the number of signs and supports required, the cost of this type of signing is relatively low.

The new signs system has not been in use long enough for accident rate statistics to have been compiled. But Metropolitan District Commission Police patrolling the parkway report a minimum of driver hesitation and confusion. Police and other Metropolitan District Commission officials have received many voluntary comments from motorists on the attractiveness and understandability of the signs.

YOUR OPINION, PLEASE?

Please rate this month's issue of TRAFFIC ENGINEERING. Remember—this is your magazine, and by letting us know your opinions, we will be able to bring to you new, better and more service. Mail to: TRAFFIC ENGINEERING, Strathcona Hall, New Haven 11, Conn.

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What other topics would you like to see included in TRAFFIC ENGINEERING? _____

24th Annual ITE Meeting Paper

No. 2. Presented at the Third Technical Session which was devoted to the subject, Operation, Wednesday afternoon, September 30, 1953.

Driver Characteristics and Highway Operation

By T. W. Forbes (Assoc. Mem. ITE)
Technical Director
National Research Council Committee
on Highway Safety Research,
Washington, D. C.

SOME TIME AGO in a discussion of human factors on the highway, a highway engineer friend of mine said in effect, "It is the drivers who cause all the trouble on our highways. Can't you do something about them?" He was perhaps expressing the general idea that no matter how well you engineer the highway, drivers can still find ways of interfering with traffic and of injuring themselves and others. To quite an extent, of course, this is true, and education of the driving public based on facts from scientific research is called for together with enforcement of well-designed laws. But at the same time, it is now being recognized that the design engineer and the traffic engineer can often improve the operating characteristics of the highway by taking more account of human abilities and limitations.

For example, the gentleman who blamed it all on the drivers later pointed out a local trouble spot. It proved to be a suburban intersection which was so complex that drivers were confused. Signing was too small and poorly located, many small islands had been used, and left turning drivers were required to dodge across an adjacent high speed traffic lane. The turning radius of vehicles had been carefully taken into account, but apparently little thought had been given to the requirements placed on the driver and, although the channelization may have looked very simple in the drafting room, it actually presented a veritable "Chinese puzzle" to the driver unfamiliar with the intersection.

It has been said that the traffic engineer's goal is to move traffic on streets and highways as efficiently as possible and at the same time safely. In order to do this, it is just as necessary in the design of highways, traffic control devices and operating procedures to take account of basic human abilities and limitations as to consider characteristics of vehicles, of control devices and of soils and materials. Although some may feel that human behavior is too variable to be predictable, a useful degree of prediction can be achieved. It is possible with proper research techniques to obtain data on a statistical distribution basis which will predict, within limits, what the average driver can and will do under given circumstances. In certain respects, it is possible to predict what conditions are necessary for a highway to be successfully used by 85 or 90 per cent of the drivers. Such an approach is now familiar in the field of speed measurements where the 90 percentile speed has been recommended as the design speed of the highway. Such speed values are, after all, basically determined by human behavior.

To return to our illustration of the highly complex intersection, let us ask what human factor information is available for use by the engineer in his geometrical design or other treatment of the intersection. The following items illustrate such information:

1. Driver response time (perception-judgment-and-reaction time) increases with the number of choices and the complexity of judgments to be made. Conversely, response time decreases as the complexity and number of choices at any one point are reduced. Likelihood of error is also reduced by reducing complexity of choices. A combination of laboratory data and measurements on the highway yield evidence for the above statements.[1] Reduction of time required for a given perception-judgment-reaction on the highway may be from 3.0 seconds [2] (or much more if he is really confused) to about 1.0 second, i.e., on the order of three to one to be conservative or an almost infinite ratio as compared to the confused driver.

Other things being equal, this factor makes it desirable to simplify signing, ramp design, channelization and the like so as to present to the driver a series of clear, simple choices in place of confusing multiple choices. The choices must be clear and simple not only to the traffic engineer and to the driver familiar with the location but also to the driver unfamiliar with it.

2. A time interval of from 0.6 to 1.0 second is required to turn the eyes toward the left, fixate the gaze long enough to see, and look again to the right. To perceive and judge an oncoming car requires in addition the judgment-perception-reaction time interval mentioned above. Since the angle of clear seeing is only about five degrees of arc, the driver is effectively blind for other areas while such a glance is being made. Therefore, if the channelization on design requires the driver to look both ways at a given choice point he must be given sufficient time for this in addition to vehicle stopping time. [3] To provide such time may require stop signs, increasing the visibility at an approach, increasing visibility of islands or other measures.

If islands are not visible or if, at a Y intersection, destination signs are so close that the driver must weave while reading, the time required to look around may easily cause him to miss signs while glancing at traffic or to collide with a car while glancing at a highway sign.

3. A deceleration of from 4 to 6 mph per second has been shown to be comfortable to automobile occupants. This requires a warning time of 8 to 10 seconds for a 50 mph design speed. Therefore, signs should be designed with large enough letters (or advance location) to provide sufficient warning time in addition to stopping distance. In addition, time for a minimum glance and reading

*The opinions expressed are those of the author and are not necessarily those of any organization with which he is connected.

of the sign should be added to the comfortable deceleration time in computing the distance at which the signs should be legible. For a single glance this medium would be from 0.6 to 1.0 seconds.[4]

4. Some information on legibility distances for given sizes of certain capital and lower case letter designs are available.[5] As has been widely recognized, the use of reflectorization or illumination to maintain the necessary legibility distance at night is very important. Further information on the many factors influencing sign legibility and attention value is needed and some studies are under way.

5. It has been shown that in a minimum glance about three short familiar words can be read by the average person.[6] To avoid more than minimum intervals during which the driver is effectively blind for the road and traffic, therefore, messages should be broken into three-word groups and spaced at least one second apart in terms of design speed.

6. Perception of an expected or a familiar pattern is rapid but an unexpected and unfamiliar pattern either is perceived much more slowly, or, if rapidly, is more likely to be misinterpreted.[7] This is of importance both for sign copy and for channelization. Thus, if an intersection cannot be simplified into a series of choices it will be of advantage to make it familiar ahead of time by means of diagrams, signs and arrows.

7. Symbols may be used to carry more information than words in a shorter time. Color may be so employed. But it is important that the meaning attached to the symbol be made familiar not only to the traffic engineer but also to the public. The driving public must be well acquainted with it or the symbol loses its effectiveness.

Importance of the Unfamiliar Driver

These and other principles have been adopted and put into practice but still not as much as they should be. And here may we note the importance of the unfamiliar driver who, although numerically in the minority, can get both himself and others into trouble. This does not necessarily mean drivers from out of state or even outside of the city. Nowadays one can find himself in unfamiliar territory in his own state or city.

Recently, on at least four different occasions, drivers were seen to emerge from an express highway interchange ramp or from a traffic circle going the wrong way. They stopped, quite puzzled at meeting one way opposing traffic. A check of the location leads to the guess that they confused the approach to a center island with a highway intersection and therefore took the left instead of the right leg. The proper course had been thought so obvious by the traffic engineers that no "keep right" signs were used.

Another driver was seen to traverse a complex channelized intersection and turn the wrong way on the far side of the main divided highway, mistaking it for an angling two-lane crossroad he was seeking. When last seen, he was proceeding happily down the wrong side of a four-lane divided express highway much to the consternation of startled approaching motorists.

Acquaintances have reported passing intersections because they could not find out which was theirs in time to change without danger. Others have been seen to change their minds at the last minute, swerve across a high speed lane and take a left throat of a Y with attendant screeching of brakes and picturesque language! In many cases such occurrences indicate deficiencies in signing or other features of the traffic design.

Highway Improvements Which Cause Human Factor Accidents

It is quite possible for physical improvements of highways to cause accidents from inadequate consideration of human factors. The opening illustration of over complex channelization was one example.

Another kind of example may be found in many places. One was recently called forcefully to the speaker's attention when he arrived just as an ambulance was carrying off the occupants of a new sedan, smashed after cutting down a 10-inch tree. A bad passing-on-hill accident had occurred nearly a week earlier.

Here a road has been straightened and given an improved surface and heavy traffic is directed to it as a through route, although its many sharp vertical curves remain. The result is something like a "roller-coaster" which drivers take at 50 and 60 mph, crowding each other with minimum headways similar to those found on a six-lane freeway.[8] The lack of horizontal curves, the volume of traffic and the desire of through drivers to "make time" apparently leads them to ignore possible hazards from side roads and entrances just over the next hill.

The highway in question is recognized as most hazardous and is on the state list for freeway treatment. However, this may take some time and in the meantime improvements on other highways are resulting in increasing volume on this road. Similar highways can be found in a number of other states as well. Thus partial physical improvement may actually introduce pschological hazards.

Human Factors on Freeways

As we know all too well, accidents involving human factors can happen also in the operation of highways of the "freeway" type. In many ways freeway design means simplification for the driver except perhaps in some cases at complex interchanges. Other problems, however, must be considered. Increased warning time must be provided for comfortable deceleration from higher speeds. At interchanges this has been done effectively by means of pre-warnings, oversize signs and graduated sizes of lettering, but neither the design engineer nor the traffic engineer can increase warning time if a car or truck pulls unexpectedly at slow speed onto the highway from the shoulder.

Both accident and fatality rates on modern freeways have been reported to be better than on comparable non-limited-access highways but the accidents which do occur reflect the importance of human factors. Misjudgments of relative speeds, of closing distance, of deceleration distance, as well as the effects of such factors as fatigue, sleep and effects of noise, temperature, and monotony may enter. Research is needed on the relative importance of these factors. To overcome them it may be necessary to assist the driver by devices to aid his judgments, or by changes of visual surroundings and the like.

One Possible Cause of Rear-End Collisions

Concern is being caused by accidents of the rear-end type on two-lane and four-lane high speed highways in the East, Midwest, West, North and South. One item of evidence on human abilities is available which may help to explain such difficulties. One study showed that judgments of speed by the ordinary person under certain conditions may involve errors as great as 25 percent. Furthermore, it showed that the *expected speed* of approaching and overtaken vehicles may affect his judgment more than his actual visual perception.[9]

The rate of change of the visual angle on the retina of the eye of a distant vehicle at high and at low speed differs only slightly thus making accurate

perception of its speed difficult. Without the assistance of roadside reference points which the distant car will pass, the driver's *idea* of the other car's speed may control the judgment.

These considerations allow us to understand on a logical basis rear-end collisions under daylight conditions on open, fairly straight high speed highways. On such highways judgments must be made at longer distances, and elimination of hazardous roadside obstacles has also reduced roadside reference points. This makes the motion of a distant car less obvious. Finally, after continuing for some time at high speed, the driver may be habituated to his own speed and may expect similar speeds from all other vehicles on the highway. All of these conditions may be expected to lead to gross misjudgment of a *slow* vehicle's speed and underestimation of his own stopping distance as well.

Under night conditions the situation is even worse because discrimination of apparent changes of patterns of rear lights requires a more complex perception and because visible reference points on the highway are even further reduced. Both factors would be expected to make accurate judgments more difficult.

If research shows such misjudgments to be an important factor in accidents, solution of both the night and day problem of this particular sort may require some method of warning to correct the driver's expectancy of the speed of other vehicles as well as widespread warnings to the driving public about this often unrealized danger.

Much Human Factor Information Available

Other information is available on such matters as target value of signs in relation to color contrast, attention value in relation to reading habits, passing distances in relation to speed, shying away from obstacles and similar items. Data on some of these subjects is given in the Traffic Engineering Handbook.[10]

Other information, although without special application to the highway, will be found in the books on "human engineering" or "applied experimental psychology."[11] Included, for instance, is information on the color sensitivity curve of the human eye which is responsible for the fading of some colors into dark grey or black at night.

More Human Factor Information Needed

More human factor research is needed, first to apply what is known from laboratory to practical highway conditions. A conference of research and traffic experts a year ago called attention to this need in the field of vision,[12] a field where a vast amount of research has been done. But, it was pointed out, night seeing on the highway is neither day nor night vision. It is intermediate and fluctuating and we need to be able to specify these conditions to apply what is known. Also the conditions of day vision on the highway differing with terrain and weather should be studied.

Secondly, more studies of specific highway behavior are needed. Not only what is the radius which a car can negotiate at a given speed on an exit ramp, but how do drivers take such a ramp? Do they overshoot and why? Why do drivers take some curves too fast as compared to other curves? Why are some geometrical designs and some control devices more effective than others? Why are some signs and signals missed by drivers and not others?

In conducting traffic research it is important, if we are to lay a valid foundation of technical knowledge, that competent study of human behavior in traffic should be included. In addition, the knowledge of drivers and pedestrians about traffic devices and their attitudes should not be omitted since both may affect efficient operation of traffic facilities. For instance, do the majority of drivers actually understand the concept of "weaving" at interchanges or on traffic circles which seems so self-evident to the traffic engineer? In some places their horn-expressed resentment toward any weaving by others indicates that they do not.

In conclusion, the growing interest among traffic engineers as well as among other traffic groups in driver characteristics, habits and behavior in relation to highway characteristics is of greatest importance. More information in this area is needed and still more consideration of these factors will aid in safer and more efficient operation of all highways.

[1]For example see:
Forbes, T. W.—Driver reaction time, perception time, and judgment time. Traf. Eng. Hdbk., Inst. Traf. Engrs., N. Y., 1941, 27-28.
De Silva, H. R. and Forbes, T. W.—Driver testing results. Harvard Traf. Bur. and W. P. A. of Mass., Boston, 1938.
Also Kennedy, John L., et al—see footnote 11.

[2]Forbes, T. W.—Methods of measuring judgment and perception time in passing on the highway. Proc. Highway Res. Bd., 1939, 19, 218-231.

[3]Mitchell, A. and Forbes, T.W.—Design of sign letter sizes. Proc. Amer. Soc. C.E., 1942, 68, 95-104; also Trans., Amer. Soc. C.E., 1943, 108, 233-242.
Forbes, T. W.—Driver reaction time, perception time, and judgment time. Traf. Eng. Hdbk., First Edition, Inst. Traf. Engrs., N. Y., 1941, 27-28.

[4]Mitchell, A. and Forbes, T. W.—op. cit.

[5]Forbes, T. W., Moskowitz, Karl and Morgan, Glen—A comparison of lower case and capital letters for highway signs. Proc. Highway Res. Bd., 1950, 30, 355-373.
References to previous studies by Forbes and Holmes and by Neal will be found in this paper.

[6]Forbes, T.W.—A method for analysis of the effectiveness of highway signs. Jour. Appl. Psychol., 1939, 23, 669-684.
Hurd, Fred—Glance legibility. Traf. Eng., Jan. 1947, V. XVII, No. 4, 161-162.

[7]See reference 6 and reference 11.

[8]Forbes, T. W.—Speed, headway and volume relationships on a six-lane freeway. Proc. Inst., Traf. Engrs., 1951, 103-126.

[9]Forbes, T. W.—Measuring drivers' reactions. Personnel Jour., 1932, 11, 111-119.

[10]Institute of Traffic Engineering—Traffic Engineering Handbook.

[11]For example see:
Chapanis, A., Garner, W. R. and Morgan, C. T.—Applied experimental psychology: Human factors in engineering design. John Wiley & Sons, New York: 1949.
Kennedy, John L., et al—Handbook of Human Engineering Data for Design Engineers, 1949, Tufts College Book Store, Medford, Massachusetts.
McFarland, Ross A.—Human factors in air transportation: occupational health and safety, 1953, McGraw-Hill: New York.

[12]Committee on Highway Safety Research—Report of highway safety research correlation conference, June 5 and 6, 1952. National Research Council, Washington, D. C., pp. 40-42.

New York City Buys 15,000 More Parking Meters

New York's Traffic Commissioner T. T. Wiley, by authorization of the city's Board of Estimate, has awarded contracts for some 15,000 additional parking meters.

According to Mr. Wiley, three thousand new meters have been purchased from the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla., and 12,000 meters from the Dual Parking Meter Co., Canton 2, Ohio.

Fourteen thousand of the new meters will be installed in about six months, while the remaining 1,000 are held in reserve.

24th Annual ITE Meeting Paper

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Shopping Centers

By Lloyd B. Reid (Mem. ITE)
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SHOPPING CENTERS are popping up everywhere like mushrooms. Every community claims one. The term is applied to anything from a corner grocery to a district built up with stores strung along a main street. But a Shopping Center has a precise meaning: it is a group of commercial establishments planned, developed and managed as a unit, with off-street parking provided on the property and related in location, size and type of shops to the trade area that the unit serves — generally in an outlying suburban area.

Because the Shopping Center idea is fairly new and because we have a mania for classifying everything, we say that there are three types which we designate as being small, intermediate, or large; or neighborhood, community or regional centers. The first group with five to ten stores generally occupies five to ten acres, the second with twenty to forty stores occupies ten to twenty-five acres and the third with fifty to one hundred stores has a minimum of thirty-five acres.

The development of Shopping Centers has been the cause of concern as to their competition with the central business district. The growth of outlying centers has been taken as evidence of downtown disintegration. If a downtown store however opens up in the suburbs while still maintaining its volume in the downtown location, this is expansion, not disintegration.

To date, the new suburban centers have had little adverse effect on downtown business, but the established districts must look to their laurels. Downtown areas hold their position in the core by reason of mass transportation facilities. Whether this condition will continue depends on the central business district's ability to provide easy access for motor vehicles and ample parking space along with fast and comfortable mass transportation facilities.

The development of a shopping center involves—

1. Making an economic analysis of the trading area.
2. The selection of a site.
3. Conducting a traffic study of the trading area.
4. Planning the site.
5. Designing the facilities.
6. Constructing the facilities.

and finally the

7. Operation of the center.

This program requires the services of technical experts including—

A Market Analyst.
A Traffic Engineer.
A Site Planner.
A Merchandising Consultant.
An Architect-Engineer.
A Landscape Architect.

The market analysis is a substitute for the golden hunches of the real estate genius. This study defines the area in which the prospective shoppers live. It involves population studies to determine the number of people living in the area as well as a careful look into the crystal ball to determine the future population. It involves an appraisal of competing shopping areas and a determination of the part of their expenditures that will be made in the new center under consideration. An estimate of the income of the residents of the area is made and broken down into commodities. There seems to be a way to anticipate how much money a family of a certain income group spends for food, how much for clothing, how much for furniture, etc.

At the end of a detailed study of the previous items, the economic analyst looks into his crystal ball. He then determines what stores should be included in the center, what items they should carry, how large the stores should be, how much of the center should be built now and how much later. He also tells the prospective tenants what profits they may expect—and Traffic Engineers think they have a tough job.

The second step in the procedure of building a shopping center is the selection of a site. Actually, this should be the third step rather than the second, because it should follow the traffic survey. In practice, however, the site is usually selected first, then the market analysis is made to determine its business potential and then the traffic engineer is called in to see if there is a way to get traffic in and out of it.

The selection of the site should be governed by its being near a well-populated residential area or one that is growing rapidly enough to support the size center contemplated. It should be accessible to an adequate system of highways. A shopping center cannot be located along a highway like a hot dog stand, where cars may enter and leave at random, unless it is relatively small. It should not be located at a road intersection, but should be surrounded by a network of highways.

The site should be large enough. Excess land may be available when a center is initiated, but may not be later. Sufficient room should be provided for expansion. The principal fault with existing shopping centers is the lack of parking space.

Availability of public utilities should also be reviewed. It is essential to have a good water supply, sewers, storm drainage and power.

In weighing one site against another, the following points should be compared:

1. Accessibility to surrounding highways.
2. Site being all in one piece and not bisected by highways.
3. Site large enough for expansion and to provide a buffer area.
4. Lack of grading complications.
5. Available utilities.
6. Zoning.
7. Price.

The job of the traffic engineer is to determine the number and distribution of the potential customers in the marketing area and to determine the routes that they will use to travel between their homes and the shopping center. It is also essential to determine the traffic not bound for the Center that will be sharing the highways with the shoppers and to determine the adequacy of the highways to accommodate both groups. It is necessary to study the hourly variations in both the external and shopping center traffic to determine the facilities needed in order to avoid congestion. A shopping center that fails to solve its traffic problem becomes a congestion center rather than a shopping center.

If it is found that the traffic can enter and leave the center without causing congestion, the next step is the planning of the site. The merchandising consultant plans the arrangement of the stores with relation to each other. This is usually done by locating the principal customer attractors so as to draw shoppers to the smaller shops. The competition between stores is also carefully planned to provide competitive shopping but not ruinous competition.

The skill used in arranging the stores within the center insures the financial success of each merchant. Since profit is the objective of the entire enterprise, the importance of the work of the merchandising expert is vital. When the size and arrangement of the stores has been determined it is time to arrange the plans for the site outside of the buildings.

There is a difference of opinion on the amount of parking space to be provided. A rule of three square feet of parking space for one foot of store space is usual. However, this may vary with the type of stores in the center.

It is important to have the traffic flow easily to and from the parking lots. Care should be taken to keep traffic movements small. This can be done by subdividing the parking area into smaller lots and connecting each subdivision to a separate road. Circulation from lot to lot may be necessary but should be minimized. General circulation should be provided around the exterior. The entire center should be small enough to permit walking from the parked car to any store in the center. If shoppers drive from one part of the parking area to another, we no longer have a parking center, but a city.

If several lots are provided, they should all have the same plan of circulation. All should enter from the same side, circulate in the same direction and exit from the same side as all other lots. Directional signs should be provided and if the areas are large the lots, rows of cars and aisles should be marked with identifying signs.

There is no best way to arrange stalls and roadways. Some prefer two-way aisles with right angle parking, others prefer angle parking with one-way aisles. Such decisions depend on the amount of space available and the ease of parking desired. Width of stalls should be sufficient to permit the stalls to be entered with ease and doors to be opened without damaging the finish on the car in the next stall.

It should be remembered that about 85 per cent of the shopping is done by women and facilities should be planned for their convenience.

Parking lots should be illuminated for night use to promote safety and minimize theft both of cars and of articles in the cars. However, light that results in color distortion may result in an unfortunate selection of a Christmas necktie. Pedestrian walks in the parking lots are usually considered unnecessary. People are willing to walk in the driveways provided they are not required to cross any heavy traffic carrying arteries.

Care should be taken to develop heavy traffic movements along the edge of the stores and between the parking lots only.

The parking lot should be paved with a smooth hard surface. Either concrete or bituminous concrete is satisfactory. Since only passenger cars will be parked, light construction will be adequate. The material used depends on cost and appearance of the surface.

Bus routes should be designed to permit them to reach a central point without conflicting with the customers' cars or crossing pedestrian routes.

It is important to provide separate facilities for the trucks serving the center, if possible. Some centers have included truck tunnels that entirely separate them from the passenger cars.

A parking lot whether filled with cars or empty is not a thing of beauty so it is essential to extend considerable latitude, and space for planting shrubs and trees. A skillful landscape architect can do much to enhance the appearance of the center.

This paper has dealt mostly with the part of the center outside the buildings. The job of the architect is to plan the buildings, malls, walks, etc., to create a pleasing appearance as well as to house the merchandise of the stores. Once the entire project is designed, there remains only the job of constructing, financing and operating the project. Having been closely associated with one of these centers, I would say that the last three items are not to be treated lightly.

It has been my privilege to assist in the planning of several shopping centers and to live with the construction of Northland Center in Detroit. This project is under construction and is scheduled for completion in March 1954. The central attraction will be a department store occupied by the J. L. Hudson Company. It will have an area of 400,000 square feet. It will be surrounded by tenant buildings housing seventy other stores occupying an area of 465,000 square feet.

The site is 160 acres of a 409-acre tract.

Provision is being made initially for parking 6,500 cars, plus space for 1000 employees' cars.

The economic analyist is Larry Smith and Company of Seattle, Washington.

The architect is Victor Gruen of Los Angeles, Detroit and New York.

I am the Traffic Engineering Consultant.

any sore

that

does not heal

...is the first of the seven commonest danger signals that *may* mean cancer...but should *always* mean a visit to your doctor.

The other six danger signals are– 2 A lump or thickening, in the breast or elsewhere 3 Unusual bleeding or discharge 4 Any change in a wart or mole 5 Persistent indigestion or difficulty in swallowing 6 Persistent hoarseness or cough 7 Any change in normal bowel habits.

For other facts about cancer that may some day save your life, phone the American Cancer Society office nearest you, or write to "Cancer"–in care of your local Post Office.

American Cancer Society

24th Annual ITE Meeting Paper

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Redevelopment and Traffic

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OPPORTUNITY IS KNOCKING on the door of the traffic engineer in nearly every city of size in our country —opportunity to solve traffic problems we may think we are stuck with for years—opportunity to facilitate traffic flow through a tightly-congested run-down section of the city—opportunity to provide more parking space where demand far exceeds supply. These are a few examples of what slum clearance and urban redevelopment can mean to the traffic engineer.

If you have a redevelopment program being planned or in progress in your community skip the rest of this article and get over to your redevelopment agency to see if your traffic problems are given due consideration in the planning of redevelopment projects.

WHY REDEVELOP? In the broadest sense redevelopment is man's attempt to bring his cities up to date with present-day urban standards and to improve city living, working, playing, managing, and financing. Blighted areas in the older parts of our cities, usually near the central business district, provoked planners, municipal officials, and local business men to do something about it. They have. All but 16 of our states now have redevelopment legislation whereby a combination of the governmental power of eminent domain and the know-how of private enterprise can weed out blight and substitute modern, safe, and profitable improvements.

Specifically, redevelopment does two things for our cities—first, it helps correct social liabilities such as substandard housing, breeding places of disease, crime, and juvenile delinquency, and the blight of heavy traffic through residential neighborhoods, and second, it changes economic liabilities into assets by transforming a run-down district into the tax-revenue producing land it should be.

Here are some of the more prevalent blight characteristics redevelopment is intended to eliminate:

1. Outmoded and dilapidated structures
2. Lack of adequate sanitary facilities
3. A mixture of conflicting land uses
4. Traffic congestion
5. Insufficient light, air, and open spaces
6. High population densities and overcrowding
7. Poorly designed street and lot patterns
8. Depreciated land values
9. Disproportionately high cost of city services

And here are some of the benefits of redevelopment:

1. Slums are eliminated
2. Appearance of the city is improved
3. The spread of blight to surrounding areas is halted
4. The rate of disease, crime, and juvenile delinquency is lowered
5. The cost of city services is reduced
6. Facilities are provided for smoother traffic flow
7. The parking problem is aided
8. Land and property values increase
9. The city realizes an increase in tax revenue

REDEVELOPMENT PROCEDURE These benefits have been difficult or impossible to attain through the usual private process of buying old property and clearing it for a new or more modern use. Usually the land is not assembled by private means alone soon enough or often enough to prevent blight. Title entanglements, absentee ownership, unreasonably high asking prices are a few of the retarding factors. So the governmental powers of condemning run-down property is employed and the land is assembled in large enough parcels to permit its highest and best use. The redevelopment agency is given this power to clear the land and with it the responsibility of relocating the site occupants to adequate quarters. At this point private enterprise takes over the buying or leasing of the land and building the new improvements. These can be homes, apartments, factories, offices, or public buildings depending on the best use for the cleared land, in accordance with the master land use plan of the city.

TRAFFIC AS BLIGHT Vehicular traffic can be a cause of blight and often is. Old residential neighborhoods provide an excellent example. Hardly a single American city is free of the blight of large volumes of traffic pounding through otherwise quiet living areas. The results are consistently in the headlines—boy chasing ball run down by speeder—girl on way to school accident victim—and consistently in the want-ads—apartment for rent—house for sale. Exhaust odors and traffic noises create nuisances. Land values decrease, maintenance and repair of improvements is neglected, and obsolescence takes over. The end result is blight deteriorating to slums.

Rarely do we see a central business district free from the damaging effect of too much traffic. Congestion in the core of our urban areas, particularly the older ones, is a direct cause of diminishing sales volumes, business activities, and property values. Catering to suburbia, we see shopping centers opening up. Parking and traffic flow are carefully studied in the planning of these centers to avoid the usual downtown cramps. A certain amount of this decentralization is good in many respects. Yet, there are city functions which just don't decentralize gracefully, and there are so many of them in this category that we'll always have a downtown. Then too, our municipal tax structure and economy is usually geared to down-

town prosperity. We're the richest country in the world, perhaps, but not nearly rich enough to scrap downtown with its billions of dollars of investments just because it's a few generations behind the times.

Traffic is a form of blight in industrial areas as well as residential and commercial ones. This is particularly easy to illustrate in the older parts of a city where industrial land uses are hopelessly mixed with other kinds of uses. Truck deliveries to and from factories are usually slowed up and often completely halted in old congested neighborhoods. Space for parking facilities for employees, business agents, and customers is difficult or impossible to obtain and usually of high cost.

But now we can use urban redevelopment as the answer to many of these problems.

GET IN THE ACT The purpose of this article is not only to emphasize that traffic engineers need redevelopment, but also that redevelopment needs traffic engineers. A few redevelopment project plans in other cities do not have the traffic engineer's best interest at heart. Some plans are fettered by a monumental scheme for the re-use of the land instead of a purely functional approach. Some other plans are burdened with just the sort of poor design such as acute-angle intersections, lack of channelization, improper parking lot access or layout that we have been trying to correct for years.

You may not, as traffic engineers, be invited to review the plans for redevelopment projects in your city. You should be. It may be only a thoughtless oversight that you're not. Too few officials realize how valuable a traffic engineer's experience and advice can be to the workability of a plan. The profession is relatively new and needs to be sold to those it will benefit. So the traffic engineer should get to know the redevelopment agency staff and be familiar with the areas being studied and the plans contemplated for these areas.

You may be surprised like Mr. Ralph Dorsey was in Los Angeles to receive a letter from your redevelopment agency requesting a traffic analysis be made by the Traffic Engineering Department of a plan for a redevelopment project. The Community Redevelopment Agency sent requests like that to Mr. Dorsey on both of its pilot projects initiating the redevelopment program in the City of Los Angeles. The traffic analysis of these projects conclusively proved two points —(1) a good plan can be made a better plan by review and recommendations of qualified traffic engineers, and (2) the good points of the plan have the blessing and support of the traffic engineers thereby assisting the selling of the plan to the public.

PILOT PROJECTS The two pilot projects proposed in Los Angeles are the First-Hill Redevelopment Project and the Ann Redevelopment Project. The former is proposed for commercial reuse of the land and the latter for industrial. These projects are relatively smaller, simpler, and more inexpensive than several residential projects the Agency is studying.

The First-Hill project, consisting of a proposed 2,000 car parking structure to cover the entire city block, was suggested to the Redevelopment Agency by Mr. Charles B. Bennett, Director of Planning of the City of Los Angeles and Technical Advisor to the Agency.

The Redevelopment Agency was concerned about the problem of access to and egress from a parking structure of that capacity flanked by busy city streets. So the traffic analysis was requested of Mr. Dorsey. His review of the proposed project indicates the streets could adequately accommodate the volume of business a parking facility of that size would do in that locality. His knowledge of traffic-flow improvements contemplated for the area of influence of the facility convinced us the plan is sound. Traffic counts were available in the vicinity and were expanded for future loads to test the effects on the parking facility. The advantages and disadvantages of proposed one-way streets in the area were studied.

The traffic engineer appreciated knowledge of this and other projects the Redevelopment Agency is studying. All of the projects have an effect on traffic problems he is working on in the areas involved and offer him an unparalleled opportunity to solve those problems.

The industrial pilot project was also improved by the traffic analysis. This project is an 8-block mixture of industrial plants and predominantly substandard residential structures. All the land is zoned for heavy industry. The object of the project is to clear the residential uses for expansion of existing industry and addition of new factories, the highest and best use of the land. The traffic anlysis revealed that all the streets in the project are on the official truck-route map of the city. This lends logic to the elimination of residential uses in the area. A new bridge proposed over the Los Angeles River and adjacent railroad tracks would provide excellent circulation of truck traffic and direct connection of the project area to one of the city's important truckways, San Fernando Road. Traffic counts in the site were available and given due consideration. Accident data furnished by the Traffic Engineering Department revealed high involvement of juvenile pedestrians, another reason for removing the residential uses.

FUTURE PROJECTS Beyond these two relatively small pilot projects, the Agency is focusing its attention on larger pockets of blight in the city. The Olympic Redevelopment Project is one. An incongruous mixture of mostly substandard residences and industrial uses complicates the smooth operation of both functions. The 16-block area of 53 acres contains 300 residential, 60 industrial, and 14 commercial structures surrounded on all sides by industrial uses.

Zoning is M3, heavy industrial, throughout. Traffic is thick and heavy, this being the heart of one of the largest industrial concentrations in the Los Angeles metropolitan area. The plan is to clear the residential uses and assemble the land in large enough parcels for a truck terminal, a facility long overdue in the urban area.

A freeway is proposed across the project. The writer developed a design of a truck terminal under the freeway. Valuable design assistance was extended by the staffs of the Traffic Engineering and City Planning Departments, the California Division of Highways, and the California Motor Transport Association.

The Bunker Hill Redevelopment Project plan is also gradually developing. Traffic Engineering plays an important part in the plan. This project is a substandard residential area adjacent to the central business district and civic center and is proposed for redevelopment into height-limit (13-story) modern, middle-income apartments. The estimated 12,000 tenants of the apartments would presumably work downtown. Walking to and from work would be a pleasant experience for these cliff-dwellers. The climate is nearly always perfect for walking, and escalators are proposed to overcome an elevation differential of a

little less than 100 feet. But also of importance is that projects like this would relieve the already over-burdened transit facilities and streets.

The project includes 15 city blocks containing 73 acres. At least two important north-south vehicular traffic carriers traverse the area, Flower and Grand streets. These are being worked into the plan without deterring their capacity nor interferring with the apartment facilities.

CHECK LIST. No two redevelopment projects are the same. Some projects present an opportunity to solve certain traffic problems and others help different traffic needs. But it would help to list those features aggravating traffic and facilities necessary to improve traffic flow. Here are some of the things to keep in mind in reviewing redevelopment project plans:

1. We can widen streets
2. Eliminate jogs
3. Make right-angle intersections out of acute ones
4. Get grade separations
5. Furnish more off-street truck loading
6. Provide channelization
7. Improve or establish arterial routes
8. Eliminate dead-end streets and alleys
9. Improve street alignment and continuity
10. Vacate alternate streets in one direction in blocks about 300 feet square
11. Make industrial super-blocks
12. Reduce sharp grades
13. Establish new truck routes
14. Provide more off-street parking
15. Get more freeways
16. Change to one-way streets
17. Install pedestrian barriers and refuge islands
18. Install traffic signals
19. Improve transit routes
20. Create truck terminals, bus terminals, and similar facilities

Some of the above items are perhaps only indirectly associated with the field of traffic engineering, but they are intended as a suggestion of what a check list should include.

TEAMWORK. A successful redevelopment program requires comprehensive teamwork. The legislative body and the redevelopment agency should spearhead the drive. As they run down the field with the ball they should pick up support for the team at the local Chamber of Commerce, Realty Board, Taxpayers Associations, and other civic and professional groups. Among the latter should be the city planner, the architect, the civil engineer, the land economist, the market analyst, the relocation manager, the attorney, and others, depending on the magnitude of the program for redevelopment, and last but certainly not least, the traffic engineer.

A team like this has good touchdown potentialities. But what of the opposition? Who is on their team? An answer could be lack of vision, reactionary stubborness, ignorance, selfishness, and political blockers. But redevelopment can win with the right members on the team and the traffic engineer is an important one. The article can be summarized with this axiom:

THE TRAFFIC ENGINEER NEEDS REDEVELOPMENT AND REDEVELOPMENT NEEDS THE TRAFFIC ENGINEER.

you get LOW-COST,
ONE MAN OPERATION
with a JAWCO
LIGHTWEIGHT TRAFFIC LINER!
The JAWCO Lightweight Traffic Liner, with 5 gallon capacity, combines ease of operation with low initial, maintenance and upkeep costs.
One inexperienced man can easily give you smooth, even, straight traffic and zoning lines with a JAWCO Lightweight Traffic Liner.
Inquire today! For further information, delivery date and price, write —
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Rip Snip Clip

SPECIAL CHRISTMAS GIFT!!

Send TRAFFIC ENGINEERING to a business friend—what better way is there to expand our message throughout the profession? We will enclose a "jolly" Christmas card from you to him (or them). Just fill in and forward to TRAFFIC ENGINEERING, Strathcona Hall, New Haven 11, Conn. Oh, yes—$3.50 per year in the United States; $4.75 per year to foreign countries.

From :

To :

Signed :

Rip Snip Clip

Technical Division Activities

Report on the Activities of Department No. 3 — Traffic Control and Operation

This is the first of a series of reports on the functions and accomplishments of the Institute's Technical Division.—EDITOR.

THE PURPOSE of our department is to make studies of various devices or methods for expediting the movement of traffic. We are interested in warrants or specifications for proper traffic regulations such as warrants for one-way streets or parking meters. This department is the largest of the six and has recently made much progress through its several projects: i.e., the committees have completed reports on portable signals, truck loading zones, effects of traffic signals on traffic hazards, and proper locations for bus stops.

Important projects for the coming year include: committee on one-way streets which is gathering data from many municipalities; committee on school crossing protection which is making valuable contributions on proper techniques necessary for school crossing protection. Also in operation are projects dealing with parking meter warrants, four-way stop sign warrants, off-center lane movement, and traffic study techniques.

Following is the Annual Department Report for 1953.

Committee 3-A "Policies on One-way Streets"

Chairman: Gordon Gravelle

This committee is under a new chairman and the latest information received from him indicated no actual work done. Expect progress next year.

Committee 3-B "Warrants for and Experiences With Pedestrian Intervals At Signalized Intersections"

Chairman: F. Houston Wynn

This committee has prepared a questionnaire which was designed to solicit information regarding the current use of pedestrian signals. It is hoped that the information received from this questionnaire will help to determine reasonable warrants for the various types of pedestrian signals. The results of this study are not complete.

Committee 3-C "Traffic Control in the Vicinity of School Zones"

Chairman: Lawrence Lawton

The final report of this committee has been submitted and is to be reviewed by the Technical Council for acceptance. The interest of this committee can best be demonstrated by the fact that the chairman presented a paper on this subject at the 24th Annual Meeting. This report, in a very concise and intelligent presentation, illustrates how municipal officials and school authorities can take steps to relieve hazardous conditions at school crossings. It is designed, however, more for a technical person who is interested in approaching the problem in a scientific manner. The report proceeds to treat the subject of school traffic signals, adult guards, school safety patrol, signs and other means of protection. The chairman is to be highly complimented for presenting an excellent report.

Committee 3-D "Warrants for and Experiences With Yield Signs"

Chairman: Herbert B. Woodling

A preliminary report of the work of this committee was submitted to the Technical Council, which in turn asked the chairman of this committee to obtain further information relative to the experiences other communities have had with this sign. In checking with other municipalities, the chairman of this committee found that they had been accepted quite well and that the sign is of definite value. The chairman recommends that this matter of the "Yield" sign be discussed at the Annual Meeting.

Committee 3-E "Warrants for Speed Zones"

Chairman: James E. P. Darrell

The chairman of this committee has been revising the membership in order to acquire persons on the committee who are interested in this subject. He has proceeded to submit a preliminary report to his committee but, as yet, has not submitted a report.

Committee 3-F "Is There a Place for Portable Signals?"

Chairman: Henry A. Barnes

This report has been approved by the Technical Council and if approved by the Board of Directors, suggest that the committee be dropped.

Committee 3-G "Parking Meters"

Chairman: Ralph H. Sprungman

The final report of this committee was submitted to the Technical Council for approval. The Council, however, made suggestions to the report and asked the chairman of this committee to give it consideration. This committee met at the Annual Meeting to consider the final adoptions of the report.

Committee 3-H "Street Illumination Practices for Maximum Night Traffic Safety"

Chairman: Otto P. Ortlieb

This committee started late in the year and consequently could not progress too far. However this committee has done some study in connection with the feasibility of using fluorescent street lighting. This committee has made the following preliminary conclusions.

(1) To produce sufficient illumination.

(2) Majority of members believe that the quality of illumination is somewhat better than other light sources.

(3) The principal advantage is the almost complete lack of glare, uniformity of pavement brightness and its adaptability for special installations.

(4) The chief disadvantage is the high cost and the size of the luminaire.

Committee 3-I "Truck Loading Zones"

Chairman: Charles A. Goodwin

The work of this committee is completed and is to be submitted to the the Technical Council for approval.

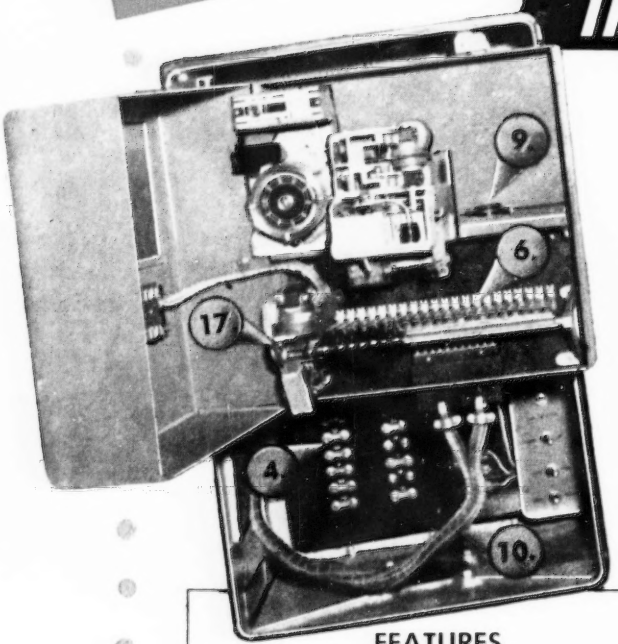
(Continued on page 60)

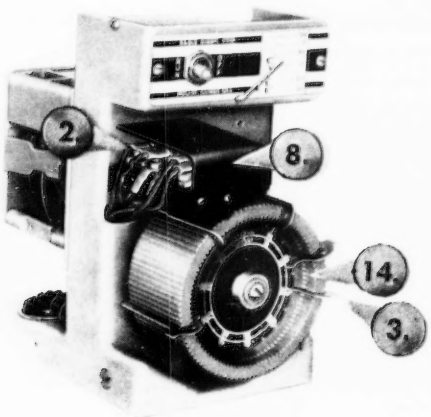
HERE TODAY THE NEW

EAGLE

MULTI–DIAL
(UNITIZED CONSTRUCTION)

TRAFFIC CONTROLLER





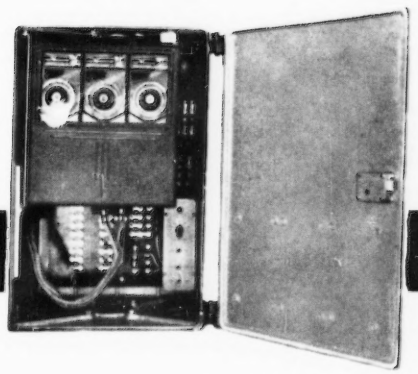
Cycle Unit

Modern **TRAFFIC CONTROL DEMANDS ALL OF THESE FEATURES**

FEATURES	CONTROLLERS				
	EAGLE	"A"	"B"	"C"	"D"
Time proven, synchronous Disc Motor	✓	✓			
Entire Controller accessible from front. Mechanism swings out.	✓	✓		✓	
Wired for 19 Signal Circuits.	✓				
Automatic Gear Mesh adjustable to gears of 1 second steps.	✓				
No "Hot" Jack Plugs exposed with cycle unit removed.	✓				
Cycle Gears changeable from front of Controller.	✓				
Front mounted accessible Dial Contacts.	✓	✓			✓
Clutch in Motor for accurate Reset.	✓				
All Motor Shafts on Ball or Roller Bearings.	✓				
Motor separately Jack Mounted.	✓				

AND MANY OTHER FEATURES . . .

OF TOMORROW



ACCESSIBILITY

1. All components accessible from the front of mechanism.
2. Dial contacts in the open.
3. Resets adjustable from the front of the dial.

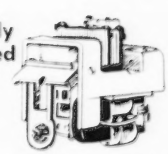
4. Large terminal panel wired for all auxiliary features.

FLEXIBILITY

5. Cycle length adjustable in increments of 1 second from 30 seconds to 130 seconds.
6. Wired complete for 19 signal circuits.
7. All features easily added using simple tools.

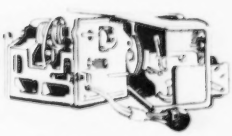
SAFETY

8. Dial contacts have safety shield.
9. Cycle unit automatically disconnected when pulled forward.



EASE OF MAINTENANCE

10. All controller wiring is color coded.
11. Cycle unit electrically and mechanically jack mounted.
12. Motor is jack plug connected to cycle unit.



13. Induction Disc Type, jack mounted, separate flasher with ball bearings throughout.
14. Dial drum is independently held to front of cycle unit.

DEPENDABILITY

15. Improved slow speed, synchronous disc motor of field proved design.
16. Improved, sturdy, attractive welded aluminum weather-proof cabinet.

17. Improved, simplified, time proved, rotary action ratchet motor.

The dream of the maintenance man come true

A quarter of a century of quality Traffic Control

EAGLE SIGNAL CORPORATION *Moline, Illinois*

Completely Automatic

NEW

Standard 4-Way Self-contained

"TRAFFIC SENTRY" PORTABLE TRAFFIC SIGNAL

Self-contained battery-operated Traffic Sentry Portable Signals can be kept in service for 18 continuous hours or 32 hours of intermittent service without recharging. The charger is housed in the base assembly and it is a simple matter to keep the battery charged and the signal in good operating condition at all times.

Equipped with ITE approved 8⅜-inch diameter prismatic diffusing lenses. Each lens is illuminated independently.

Available with manual remote control.

PORTABLE TRAFFIC SIGNALS, INC.

1620 South Hill St.
Los Angeles 15, Calif.

Positions Available

TRAFFIC ENGINEER

For the City of Peoria, Illinois. Graduate engineer with thorough knowledge of traffic engineering principles and practices.

Apply: Mr. George E. Bean, City Manager, Peoria, Illinois.

ASSOCIATE TRAFFIC ENGINEER

For the City of San Diego, California. Entrance salary very attractive. Three years' experience and college degree in engineering necessary. No written test to be given.

Address inquiries to Civil Service Commission, Room 453 Civic Center, San Diego, California.

REPORT

(Continued from page 57)

Committee 3-J "Effects of Traffic Signalization on Traffic Hazards"

Chairman: David M. Baldwin

This committee has been dropped.

Committee 3-K "Warrants for Four-way Stop Signs"

Chairman: Wilbert F. Watkins

The work of this committee is progressing and a preliminary report received by the chairman indicated that four-way stops have a very definite place in the control of traffic, particularly at every accident intersection involving right-angle collisions. Also, that motorists seem to accept four-way stops except where heavy traffic volumes occur. The committee has tentatively accepted 6,000 cars per day as a maximum volume requirement.

Committee 3-L "Warrants for Pedestrian Refuge Islands"

Chairman: Ross T. Shoaf

This committee is still conducting studies in preparation of their report.

Committee 3-M "Proper Locations for Bus Stops"

Chairman: Paul L. Ristroph

The final report for this committee has been accepted and a copy submitted to each member of the Technical Council, for their approval. The chairman of this committee is to be complimented for his very fine work.

Committee 3-N "Special Routes for Commercial Vehicles"

Chairman: Herman J. Hoose

The final report of this committee was submitted to the Technical Council for approval. However, the Council suggested several changes. No report has been received yet relative to the suggestions made by the Technical Council.

Committee 3-O "Warrants for Off-Center Lane Movement"

Chairman: Ralph T. Dorsey

This committee is still in the organizational stage.

Committee 3-P "Development of Traffic Study Techniques"

Chairman: Winston H. Carsten

A report has been submitted by the chairman for approval by the Technical Council. Members of the Technical Council have also received this report.

Respectfully submitted,

MATTHEW C. SIELSKI
Head of Department No. 3

New Appointments . . .

Carsten Takes New Post

Houston, Texas, one of the fastest growing cities in the country, has added to its engineering staff the name of W. H. "Win" Carsten (Mem. ITE). Win goes to Houston well qualified to take over the position of Assistant Director, Department of Traffic and Transportation, in view of his seventeen years ex-

Winston H. Carsten

perience in traffic and planning with the Washington Department of Highways.

Although born in St. Louis, Missouri, the majority of Win's forty-two years have been spent in the Pacific Northwest. After graduation from the University of Washington in 1936, he went to work with the Washington Department of Highways. By 1939, with a background of numerous highway location and construction jobs behind him, he had joined the headquarters office in the newly created Traffic Engineering Division where his quick adaptability to the relatively new field earned for him a fellowship at the Yale Bureau of Highway Traffic. Upon completion of his graduate work in 1941, Win returned to the Washington Highway Department where he stayed until called into the service in April, 1942.

Private Carsten (who started his army career as a bugler in the infantry) wound up his service as a Captain in the Corps of Engineers. Five battle stars and numerous ribbons were gathered while seeing service in England, France, Belgium, Germany and the Philippines. Win (a Major in the ORC) returned to the Highway Department in 1946 as Assistant Traffic Engineer and specialized in the field of urban traffic studies. Two years later found him in the role of Assistant State Planning Engineer, administering the planning and development of Washington's Highways.

As Secretary-Treasurer of the Western Section ITE, and Chairman of the "Committee on the Development of Traffic Study Techniques," he has played a prominent role in the Institute's activities. He is a registered Professional Engineer and a member of the Northwest Society of Highway Engineers.

One of his first assignments in his new position will be the development of a Civil Defense Transportation Plan for the City of Houston.

Barnes—Traffic Director—Baltimore

Denver's loss has become Baltimore's gain this past July 15th. Henry A. "Hank" Barnes (Mem. ITE) is no longer Director of Traffic, but is now Traffic Director. From December, 1947, until this past July, Hank had served in this position with the City and County

Henry A. Barnes

of Denver, Colorado. Forty-seven years old, and born in Newark, New York, his education and his progress in the profession has been one of experience and interest.

His family moved from New York to Daytona Beach, Florida, in 1922, where he entered apprenticeship in the electrical field. The following four years he worked on electrical construction and land surveying, and as a driver of a large bus for the Coral Gables Development Company. In 1926 he moved to Flint, Michigan, where he continued in the electrical contracting field and at the same time attended night school at Flint High Extensive School and Flint Junior College. He continued acquiring education during the next twenty years, majoring in electrical engineering and business administration at the General Motors Institute of Technology. He also received extensive school training in traffic engineering at the University of Michigan and in safety engineering at Michigan State College. During those twenty years he worked principally for the Chevrolet Motor Company in their export division, and later transferred to the electrical maintenance department. From 1932 until 1937 he had charge of all electrical construction and maintenance at one of their large motor plants.

In 1937 he became affiliated with the Flint Police Department as signal engineer and later was transferred to the Traffic Engineering Bureau in 1939 when Henry Osborne was appointed as Flint's first Traffic Engineer. When Osborne moved to Buffalo in 1941, he was given the appointment as Traffic Engineer for that city. During the war he was in charge of all mass transportation facilities and gasoline rationing for the entire area.

On December 1, 1947, he accepted his last appointment with the City and County of Denver, Colorado, from which he has just recently advanced to his present position in Baltimore City, Maryland.

His career has several important achievements; these include the construction of the Flint master control system for the downtown traffic lights and the "electronic brain" control system for the Central Business District and five outlying areas in Denver, Colorado. Henry says that "He was not the first to use the pedestrian interval control as reported, since Tom Seburn, Kansas City, had used this system prior to our installations." But it is recognized that Hank was the first to use this system for an entire business area of approximately fifty intersections.

He is a member of the ITE, the American Institute of Electrical Engineers, the Illuminating Engineering Society, the Highway Research Board and the Colorado Engineering Society.

Hank is married and has a son, 24, and a daughter, 13. His additional interests include the construction and

(Continued on page 66)

TRAFFIC PRODUCTS AND NEWS

Trafficones Celebrate Tenth Birthday

Mr. Charles Terry, President of Interstate Rubber Products Corporation, Los Angeles, California, says a lot of water has gone over the dam since TRAFFICONES were first introduced in the early part of 1943.

When the idea of using a flexible rubber cone with a steel-like appearance for traffic control was presented to Mr. Terry, he felt that here was a revolutionary new device for traffic control. Not only did it offer the means for guiding motorists gently into safe lanes of traffic and warning pedestrians of hazardous conditions, but it had an enormous money-saving factor. The many man-hours consumed in building wooden and wire barricades, only to have a careless motorist wreck them in one sweep, could now be eliminated and further, the cost of the materials for these old-fashioned traffic control devices would be saved with the new long-life TRAFFICONES.

This simple modern device however, took many months of careful study and research before it was presented to Traffic Engineers throughout the country. It had to be designed so that wind from passing cars would not blow it over and it had to be sharply visible to the motorist's eye. Building it with a low center of gravity solved the wind problem and, after a careful study, the colors red, yellow and black were selected because of their long range visibility.

Versatile Crouse-Hinds Floodlight Lights Areas Next to Buildings

Besides lighting tunnels and underpasses, a flush-mounted floodlight, type RCD-12, manufactured by Crouse-Hinds Company, Syracuse, New York, has many other applications. Ideal for parking areas adjacent to buildings, the new fixture is also suitable for lighting areas next to building entrances, roadways, commercial driveways or walks.

Floodlights for Parking Areas

When mounted 10 feet above a roadway, one of these 115-volt floodlights, equipped with a 300-watt clear bulb, delivers as much as .38 foot candles of light on a horizontal surface 30 feet away from the center of the floodlight. By properly spacing these units, any required illumination level can be achieved.

The RCD-12 floodlight has four major components: cast aluminum housing, 12-inch Alzak reflector and 12-inch diffusing impact and heat resisting glass lens. Two types of reflectors are available, either etched Alzak for short range or narrow beam polished Alzak for long range.

In addition to city traffic control, many other uses are found for TRAFFICONES. Utility trucks carry them because of their light weight and portability, which makes it simple to set up a barricade for maintenance operations. Drive-In Theatres use them to guide traffic into the proper channels. Many automobile associations conducting speed trials are using TRAFFICONES to guide the drivers into safe lanes at such notable locations as Muroc Dry Lakes in California.

Parking Meters Are Big Business Everywhere

Parking meters, whether in your small hometown, or in the city are big business and mean a substantial income to all communities in which they are used. The actual income from the meter is one source, and the fines imposed for violations is still another. It has been estimated that the meter take throughout the United States is estimated at more than $76,000,000 a year—that is big business.

There are few places in the United States where a motorist can park in a business district of a large community and not find parking meters. Baltimore is the only city of more than 500,000 population which has not adopted parking meters. They have been outlawed in North Dakota by popular referendum.

More Than a Million

A recently concluded, year-long study of parking meters, conducted jointly by the American Municipal Association, the Highway Research Board, and the Bureau of Public Roads, found that there were approximately 1,113,000 parking meters operating in 2,800 communities as of January, 1952.

In reviewing gross revenues from parking meters, of the places reporting, California appeared to be the best revenue producer with an annual income of over $4.5 million. Pennsylvania is next with over $2.3 million. Meters in seven states—Illinois, Massachusetts, Michigan, New York, Ohio, Oregon, and Texas—produce between one and one-half and two million dollars of gross revenue. Six states—Iowa, Minnesota, New Jersey, Tennessee, Washington, and Wisconsin—collect approximately a million dollars a year from their meters.

Substantial revenues were noted in places under 2,500 population such as Oakland, Md., which grossed $7,762, and Plymouth, N. H., $11,554. The largest annual gross revenue figure reported was $763,291 for San Francisco, Calif.

City Meters Get Most

The estimated average annual revenue per meter was $70.48 for 1951. Lowest figure was $48.73 per meter for places with a population between 2,500 and 5,000. The highest average revenue per

DUNCAN **MILLER** MANUAL

DUNCAN **AUTOMATON** AUTOMATIC **NOW!**

HALF-A-MILLION IN DAILY USE

We're talking about and celebrating our leadership as America's largest producer of parking meters. Specifically, industry's oldest and most dependable manual, Duncan-MILLER, and industry's newest and only one-motion 100% automatic meter, the Duncan-AUTOMATON.

Last month marked production of our HALF-A-MILLIONTH unit — more by far than any other make. In over 1200 cities where they're in use, they've ticked off time for more than 16 years. Sufficient reason why cities like Chicago with the world's greatest meter installation of 30,000 Duncan-MILLERS, or the mile-high city of Denver with its 6000 Duncan-AUTOMATON automatics, down to the tiny mining town of Clay, W. Va. (pop. 500) using 100 Duncan-MILLERS, choose the two meters most preferred in the United States, Canada and many foreign countries. You have only to ask, to get all the facts. Write us today.

DUNCAN
PARKING METER CORP.
835 N. WOOD ST. CHICAGO 22, ILL.
Factory at Harrison, Arkansas

Manufacturers of the DUNCAN-AUTOMATON fully automatic and the DUNCAN-MILLER manual parking meters.

meter was $89.67 for localities of a quarter to half a million population.

A low of $33.45 per meter per year was reported for New Mexico, while a high of $96.85 per meter was collected in Rhode Island during 1951. Most states had averages ranging from $60 to $90 per year per meter.

All of the five cities having a population of a million or more—New York, Chicago, Philadelphia, Los Angeles, and Detroit—have installed parking meters.

The study revealed that most meters are found in the larger and more urbanized states. Reports for the study were received from 41.6 per cent of all incorporated places in the United States known to have parking meters. Of more than half a million curb meters in the places reporting, these states were found to have the following number of meters:

California Leads

California, 66,984; Florida, 14,520; Illinois, 22,522; Iowa, 15,421; Massachusetts, 20,925; Michigan, 23,833; Minnesota, 14,256; New Jersey, 16,551; New York, 29,801; Ohio, 22,645; Oregon, 19,687; Pennsylvania, 37,293; Tennessee, 18,418; Texas, 28,932; Washington, 16,206, and Wisconsin 18,165.

In addition to the 1,113,000 parking meters already in use, 67,023 meters are proposed for use at the curb in 39 jurisdictions, and 18,734 meters in off-street facilities in 28 states.

Packed Areas Adding More

More than half of the additional meters contemplated are being considered in the larger cities of a half-million population and over. However, the bulk of new proposals for off-street meters is concentrated in the 10,000 to 250,000 population cities. Also a far greater percentage increase in meters is proposed for off-street installations at the curb.

Some of the cities contemplating substantial additions to their present meter installations are New York, 12,000; Philadelphia, 10,687; Norfolk, Va., 1,250; Minneapolis, 1,400; Detroit, 2,727; Washington, D. C., 5,000; Orlando, Fla., 1,000, and San Francisco, 2,000.

When Traffic Signals Are Mounted on Light Poles

There have been many cases of the use of one pole for mounting both traffic signals and street lights. One of the outstanding installations in the country is in Washington, D. C.

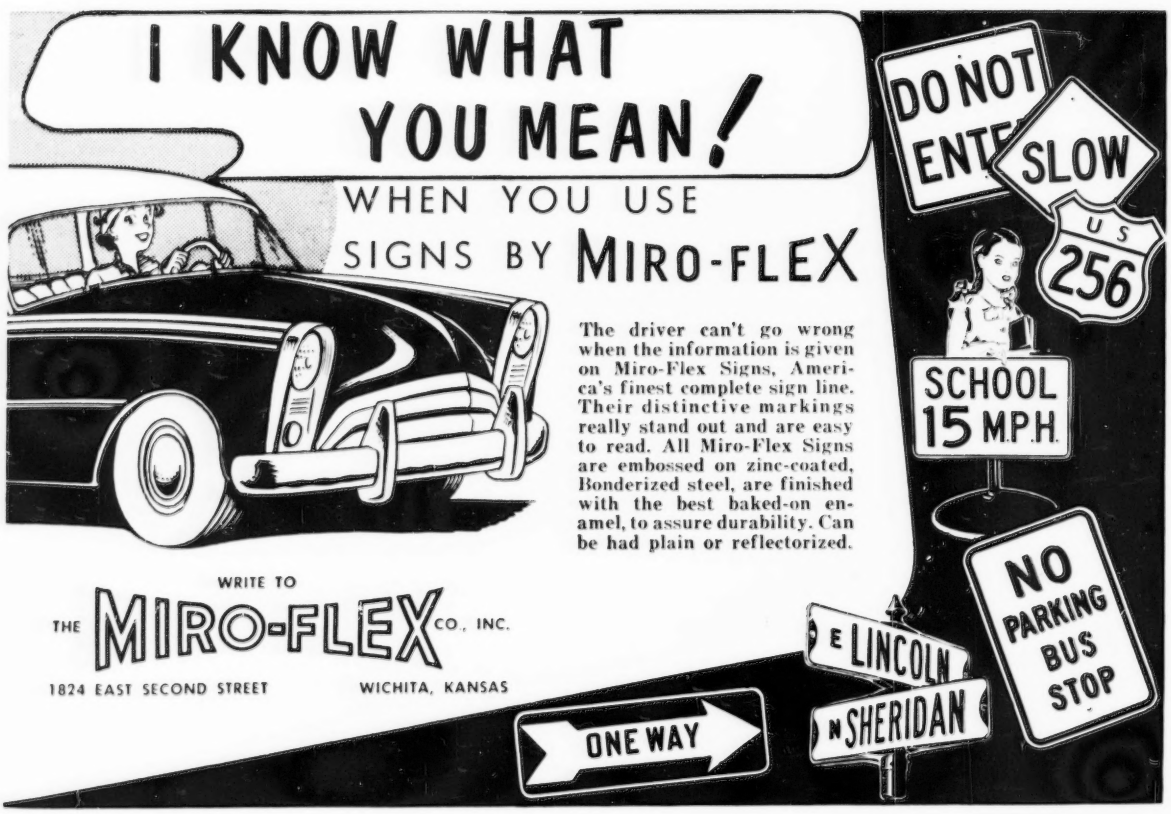
Certain precautions must be observed with traffic signals, which require low voltage, when they are mounted on street-lighting poles, which have high voltage. Let us consider first a straight series circuit of street lights with no line insulating transformers. In this case, the high-voltage cable runs up through the inside of the pole; generally it is either lead or parkway cable.

When the traffic signals are mounted on such a lighting standard, I would recommend the use of lead-covered cable for traffic signals. A lead sheath should be grounded to the pole.

In other cases, the street-lighting circuit may have a line insulating transformer in the base of the pole. In this case, the wires running up through the pole to the street light are of low voltage, and if the cables can be separated from the base of the pole, then ordinary cable can be used for wiring the traffic signal.

In modern street-lighting systems, it is almost a universal practice to use a line insulating transformer. Sometimes a transformer is just set in the base of the pole and in other cases it is buried in a pit and can be covered with copper.

K. W. MACKALL
Commercial Vice-President
Traffic Signal Division
Crouse-Hinds Company
Syracuse 1, N. Y.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WHEN YOU USE
SIGNS BY MIRO-FLEX
The driver can't go wrong when the information is given on Miro-Flex Signs, America's finest complete sign line. Their distinctive markings really stand out and are easy to read. All Miro-Flex Signs are embossed on zinc-coated, Bonderized steel, are finished with the best baked-on enamel, to assure durability. Can be had plain or reflectorized.
DO NOT ENTE
SLOW
US 256
SCHOOL 15 M.P.H.
NO PARKING BUS STOP
E LINCOLN
N SHERIDAN
ONE WAY
WRITE TO
THE MIRO-FLEX CO., INC.
1824 EAST SECOND STREET
WICHITA, KANSAS

From the Editor's Desk

Leonard F. Dyer, (Affil. ITE) of L. F. Dyer Limited, Traffic Engineers and Consultants, London, England, forwarded this photo. Mr. Dyer stated that England is slowly becoming traffic conscious and appreciative that there is more to it than just accepting chaos as inevitable.

ROYAL AGRICULTURAL SOCIETY'S SHOW, 1953

Over 30,000 cars visited the Royal Show at Blackpool this year (July 7-10). Scientific planning of the car parks enabled vehicles to be dealt with as shown in this air photo, at the rate of more than 3,000 cars an hour. The absence of traffic delay was a feature of the Show.

Courtesy: Auto Parks Limited

Mr. Paul S. Robinette (Mem. ITE), Traffic Manager, City of Toledo, sent us the following editorial from his local paper. It appeared in the Toledo Blade, May 28, 1953.

Everybody Wants a Light

One of our councilmen brought up this week the request of citizens in a certain area for a traffic light at a specific intersection. The application had been previously turned down by traffic and safety authorities. But now a child had been injured and residents were renewing their pressure for a signal. The councilman was passing the matter on to the Administration for reconsideration.

Should traffic lights be installed under duress from irate citizens, who, perhaps mistakenly, believe that a signalized intersection is the answer to accidents?

Toledo's streets are burdened with some poorly located lights. They have been put in place in past years because of popular or political demand and would be better removed and shifted to more useful sites. There is currently a large backlog of requests for lights at this point and that. And even today, it seems safe to hazard, not all signals are installed on merit alone.

Most of us have probably joined at one time or another in the agitation for a particular light. That's our privilege. We may have been right. Yet here are a few facts that can profitably be remembered:

(1) Traffic lights are no guarantee of safety. On the contrary, most accidents happen at signalized intersections. Lights tend to relieve the driver of his responsibility to make his own decision on when it's safe to proceed. They cause the driver to hurry to complete movements. They compress traffic into tight formations which must make conflicting movements within a short space of time.

(2) Lights can make the safety situation worse. They actually increase certain types of accidents for the reasons given above—notably rear end collisions, collisions in turning, and collisions of cars going in opposing directions.

(3) Lights are the equivalent of valves designed to regulate the flow of traffic. Correctly placed, they are invaluable. Placed unscientifically, they clog a city's arteries.

Modern traffic regulation, in short, is like modern plumbing. It is no job for amateurs. We can make suggestions to our "plumbers." We can criticize them. We can withdraw our patronage if their work isn't satisfactory. But we can expect one fine mess if we insist on doing the job personally.

LOOKING AHEAD

DECEMBER 10-11, 1953—WASHINGTON, D. C.
National Conference on Highway Financing, Shoreham Hotel.

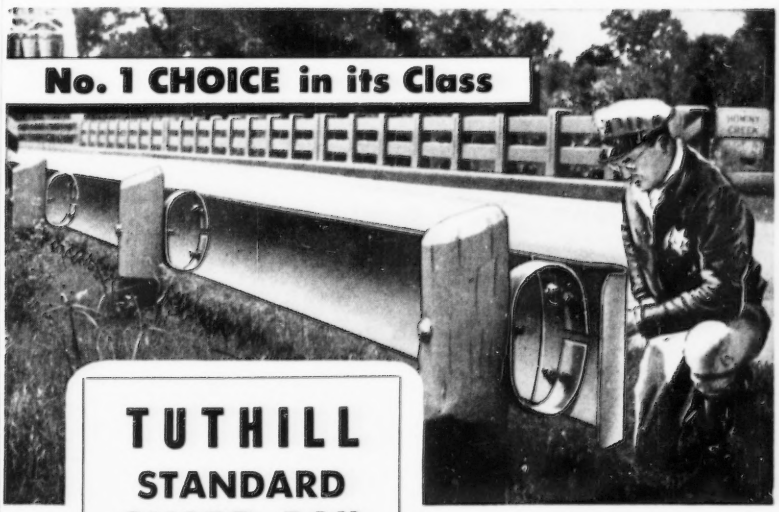
JANUARY 5-7, 1954—ATLANTIC CITY, N. J.
Annual Meeting, American Road Builders' Association, Chalfonte-Haddon Hall.

JANUARY 12-15, 1954—WASHINGTON, D. C.
Annual Meeting, Highway Research Board, Academy of Science Building.

MARCH 7-9, 1954—LOUISVILLE, KENTUCKY
Southern Safety Conference and Exposition, Kentucky Hotel.

MAY 4-6, 1954 — WASHINGTON, D. C.
Fifth Highway Transportation Congress, Mayflower Hotel.

SEPTEMBER 27-30, 1954 — KANSAS CITY, MO.
25th Annual Meeting, Institute of Traffic Engineers, Muehlbach Hotel.



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Caricatures—24th Annual Meeting

Both of these subjects appear to have had their portraits drawn at very late hours in the evening by the Convention artists — Joe Prismo and Sally Zippert. Surely identification is not necessary, but just in case: The "King" is our *Immediate* Past President, Bruce Crandall; Director, Matt Sielski owns the "20 Yard Matt" profile.

BARNES

(Continued from page 61)

operation of miniature electric railway control systems. Although his home does have furniture, it also contains a complete machine and wood-working shop along with his railway and experimental electronic equipment. It is also fairly apparent that Hank sometimes smokes cigars!!

From the Editor's Desk

(Continued from page 65)

Our September issue of TE sported "IF—I WERE A TRAFFIC ENGINEER" on page 453. Several letters attempted to identify the productive effort of our unknown author—but one correspondent did contain the necessary "confession." Following are two of the letters "From the Editor's Desk."

Sir:

It makes me feel like a real antique to recognize the bit of parody poetry on page 453 of TRAFFIC ENGINEERING for September 1953, as something which I first heard as a product of the ITE Resolutions Committee at one of the earlier Annual Meetings of the Institute. For some reason, I have been under the impression that the author (with the help of Rudyard Kipling) was one Hawley Simpson, but perhaps this is just because he was so active as chairman of the Resolutions Committee in those days.

I have tried, unsuccessfully, to find in my files a copy of the poem that I know I once had, though I do not believe it was signed by any author. I did find a copy of the *Report of the Resolutions Committee* for 1936, in which Mr. Kipling is listed as a "non-member" to whom apologies are "Declaimed by—Sidney J. Williams."

If the parody was written by one of our own members, I think credit should be given where credit is due. Perhaps some other old timer can supply the straight facts.

WILLIAM G. ELIOT, 3d
Bureau of Public Roads
Washington, D. C.

The Report of the Resolutions Committee was the "tongue-in-cheek" program used for the Annual Banquet as organized by the Resolutions Committee.

Although our poem was dis-interred by Mr. H. L. Guiney, Manager of Crouse Hinds' Washington Office, the expected confession is owned by Automatic Signal (Who said that competitors don't appreciate each other's products?):

Sir:

Although Fenton Jordan is ordinarily a gentleman of taste, there is room for some difference of opinion on his choice of poetry. In any event with reference to "IF—I WERE A TRAFFIC ENGINEER" on page 453 of TRAFFIC ENGINEERING for September 1953, I may as well own up to authorship right away as it will be discovered anyhow. One of the many differences between other famous (or infamous) poets and myself is that they are usually not around when someone digs up some deathless bit of verse with no name attached to it, while in my case I can still raise a feeble hand and answer for my crimes.

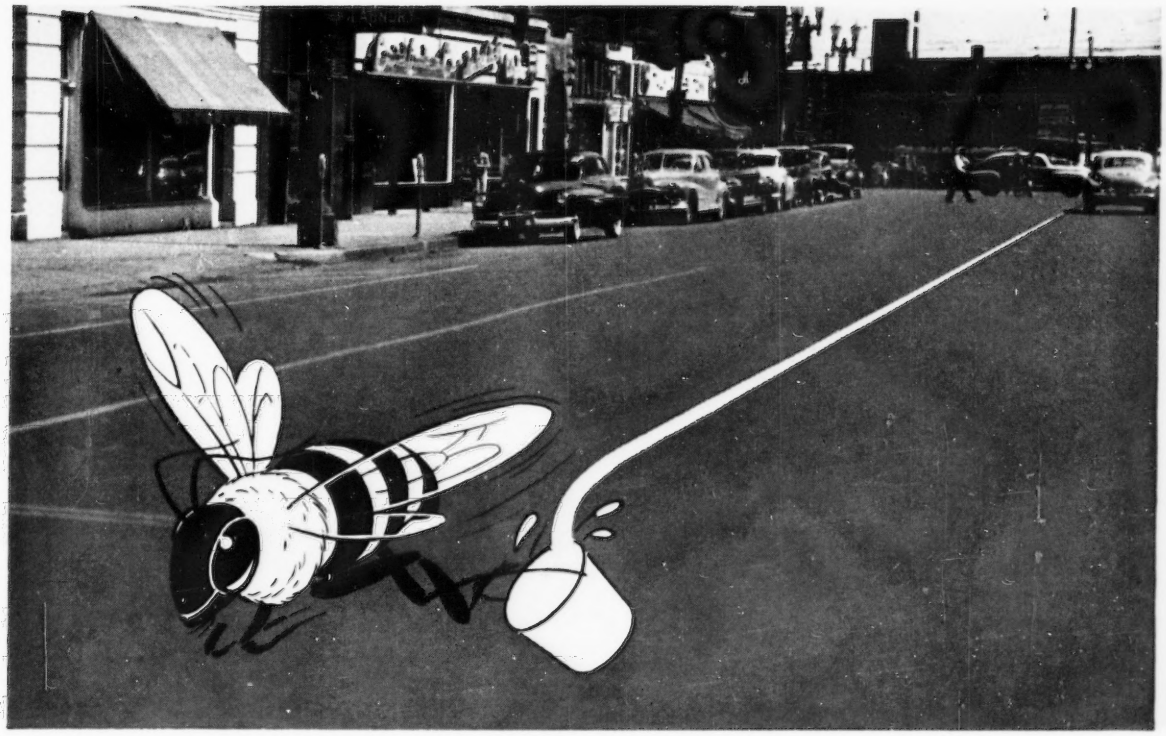
The "IF" parody was first published in the January 1937 issue of the AMERICAN CITY MAGAZINE. Those were the days before TRAFFIC ENGINEERING when the publications committee of the Institute conducted a Traffic Control and Facilitation Section in the AMERICAN CITY. As Chairman of that committee for several years it was often a job to get material and "IF" was written largely to fill up space. For a year or two I remember seeing a copy pasted up on the library door of the Yale Bureau in Strathcona Hall—I am not sure whether it was pasted up to cover a crack or perhaps in emulation of another famous portal which is reputed to bear the legend "Abandon hope all ye who enter here," or words to that effect.

While on the subject of questionable poetry I seem to remember something of the sort in one of the preliminary announcements of the Buffalo Convention. Could this be the product of one who was once referred to as a poet laureate of the State of Virginia?

PAUL L. GREEN
Automatic Signal Division
Norwalk, Connecticut

Buffalo Convention Chairman, Henry Osborne; President, Don McNeil; and First Vice-President, Harry Porter are pictured in a "sales talk" on Buffalo at one of the many display tables of the 24th Annual Meeting.

Courtesy Buffalo Evening News



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SECRETARY'S COLUMN

While at the Buffalo meeting I was most surprised to learn how little the general membership knows of the manner in which our Nominating Committees function. There seems to be a feeling that an air of mystery should surround the selection of nominees; just why this is so is hard to understand.

The Institute's By-Laws provide for the election of a President, two Vice-Presidents, a Secretary-Treasurer and three Directors every year just prior to the Annual Meeting. The four officers are elected for one year terms, while the three Directors each representing one of the six geographical districts, are elected for two years. Districts 1, 2 and 4 elect Directors in odd-numbered years while 3, 5 and 6 elect in even numbered years. In other words districts 3, 5 and 6 will install new Directors at the Kansas City meeting.

The By-Laws (Art. V) provide that not later than January 1 of each year the Board of Direction shall appoint a Nominating Committee of five members, including one representative from each District in which a Director's vacancy occurs. The Board ordinarily delegates its appointive power to the President. The Committee must nominate one or more candidates for each office and for each Director's seat where a vacancy occurs. Candidates for Directors must represent the District within which their mailing addresses are on record at election time. The Nominating Committee has to receive the written consent of each potential candidate prior to the nomination being formally announced. Only full Members are eligible to hold elective office.

By past custom the Nominating Committe's Chairman is drawn from the preceding year's Committee. In addition to a representative from each of the three districts one other "member-at-large" is appointed. According to custom all appointees are full Members.

The Board always instructs each Nominating Committee to diligently consider the entire eligible membership in seeking the best qualified leadership for its nominees which are to be made without prejudice as to station in life, occupation or location (except Director nominees where district boundaries govern). It further instructs the Committee to secure the Nominee's commitment to attend a majority of the Board's meetings during the term he may be elected for.

The Nominating Committee ordinarily begins its work—which must all be accomplished by correspondence—about the first of each calendar year. It must complete its work and file a report by May 1st. Therefore, all of you who would like to suggest the names of nominees or urge support of any candidacy should get in touch with some member of the Nominating Committee—preferably the representative of your district—before the first of this coming January.

The new Nominating Committee is made up of the following:

Chairman, Walter H. Klapproth, City Traffic Engineer, 3101 Perry Lane, Austin, Texas

Representing District 3; Light B. Yost, Director Field Operations Section, General Motors Corporation, Detroit 2, Michigan

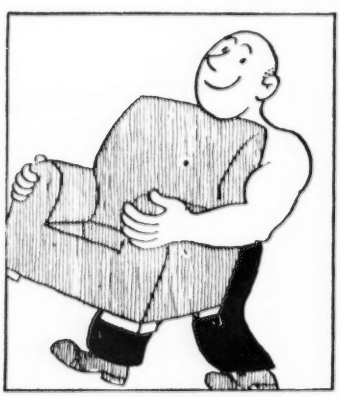
Representing District 5; William O. Shrader, City Traffic Engineer, City Hall, Montgomery, Alabama

Representing District 6; Mrs. Margaret Woolverton Savage, Traffic Engineer, Quinton Engineers, Ltd., 812 West Eighth Street, Los Angeles 17, California

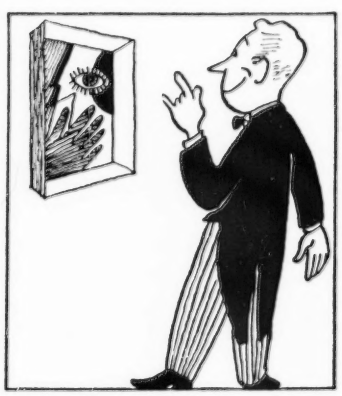
Member-at-large: J. Edward Johnston, Manager Traffic Engineering Department, American Automobile Association, Pennsylvania Avenue at 17th Street, N.W., Washington 6, D. C.

TIM TODD

Good Listener



Muscular Toiler



Intellectual Companion

Courtesy Harrison 20-20

1953 - 54 Committees

President Donald M. McNeil made ITE history when he lined up his Administrative and Technical Division appointments and distributed printed rosters before the 24th Annual Meeting ended in Buffalo on October 1st. The roster, which will be subject to correction until the 1954 Yearbook is printed in January, is herewith reproduced. Members wishing to make suggestions as to appointments or corrections should get in touch with either President McNeil, Vice-Presidents Porter or Prisk, or their Department Head well before the end of 1953.

COMMITTEES OF THE INSTITUTE OF TRAFFIC ENGINEERS

The President is ex-officio a member of all committees.

ADMINISTRATIVE DIVISION

Charles W. Prisk, Vice-President, Head of Division

ANNUAL MEETING COMMITTEES

Thomas J. Seburn, General Chairman

MEMBERSHIP COMMITTEE

L. E. Bender, Chairman

Regional Members

East - - - - - G. K. Gravelle
Midwest - - - - - G. J. Fisher
South - - - - - W. H. Mann
West - - - - R. B. Luckenbach

NOMINATING COMMITTEE

W. H. Klapproth, Chairman

Light B. Yost - - - - - - - - - - - - - - - - - District 3
William O. Shrader - - - - - - - - - - - - - - District 5
(Mrs.) Margaret Woolverton Savage - - - District 6
J. Edward Johnston - - - - - - - - - - Member at large

POLICY COMMITTEE

F. B. Crandall, Chairman

Nathan Cherniack — Robert A. Mitchell
Ernest P. Goodrich — Harry E. Neal
Burton W. Marsh — Thomas J. Seburn
Lewis W. McIntyre — Hawley S. Simpson
D. Grant Mickle — Wilbur S. Smith
Harold F. Hammond

COMMITTEE ON WAYS AND MEANS

Merwyn A. Kraft, Chairman
Harry Porter, Jr., Ex-Officio Member
Charles W. Prisk, Ex-Officio Member

Robert J. Allen — J. Edward Johnston
Fred W. Hurd — D. Grant Mickle

COMMITTEE ON NEW MEMBERS

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M. Mansfield Todd, Ex-Officio Member

Warren E. DeYoung — M. Alfred Kaehrle
John B. Ecker — Merwyn A. Kraft
Philipe Ewart — Samuel J. Levine
Joseph J. Feuchter — W. F. Milner
Thomas J. Fratar — Paul L. Ristroph
Ralph F. Gross — Leslie Williams
Robert M. Williston

PAST PRESIDENTS' AWARD COMMITTEE

F. B. Crandall, Chairman

N. Cherniack — B. W. Marsh

TECHNICAL DIVISION

Harry Porter, Jr., General Chairman
Head of Division
Henry K. Evans, Coordinator of Research

Technical Council

Harry Porter, Jr., General Chairman
Henry K. Evans, Secretary

Lloyd M. Braff — Alger F. Malo
Joseph E. Havenner — Edmund R. Ricker
Norman Kennedy — Matthew C. Sielski
Stanley T. Siegel, Editor, Reference Notebook

Reference Notebook

Stanley T. Siegel - - - - - - - - - - Editor
Robert J. Allen - - - - - - Associate Editor
George W. Howie - - - - - Associate Editor
Edward G. Mogren - - - - Associate Editor

Committee on Technical Sessions

J. Edward Johnston, Chairman
Harry Porter, Jr.

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L. W. Corder — A. F. Malo
H. K. Evans — E. R. Ricker
J. J. Feuchter — T. J. Seburn
J. E. Havenner — S. T. Siegel
M. C. Sielski

Department No. 1

TRAFFIC ENGINEERING ADMINISTRATION

J. E. Havenner, Department Head

Scope: **To define by a series of specifications, the administrative functions of the traffic engineer and his relationship to the engineering and planning activities of the city and cooperating agencies on other levels of governments, such as the Police Department, Planning Commission, Department of Streets, Building Department, State Highway Department, State Traffic Commission, etc.**

Committees:

1 A. Organization and Functions of State and Traffic Engineering Departments.

D. Grant Mickle, Chairman
Robert J. Allen, Secretary

C. G. Beckenbach — R. A. Mitchell
B. R. Culver — D. T. Myers
R. A. Flynt — M. Woolverton Savage
A. W. Gove — L. J. Sorenson
P. P. Hale — R. O. Swain
K. M. King — A. H. Vey
L. Williams

1 C. What Traffic Engineering Is and What Traffic Engineers Do.

Jerome D. Franklin, Chairman

J. T. Hanna — H. J. Klar
A. T. Hayes — M. A. Powills, Jr.
R. S. Holmes — S. T. Siegel
R. E. Schmidt

1 F. Annual Inventory of Traffic Engineering Activities.

Maxwell Halsey, Chairman

H. Porter, Jr. — J. H. Mitton
J. H. Bunch — J. P. Mills, Jr.
D. M. McCracken — L. B. Yost
D. G. Mickle — C. W. Prisk

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1 H. Traffic Engineering Definitions.
Kenneth G. McWane, Chairman
B. A. Bledsoe — G. T. Papageorge
L. W. Corder — M. C. Stark
E. H. Holmes — C. R. Weaver

1 I. How to Handle Traffic Complaints.
James E. Reading, Chairman
H. F. Aumack — G. F. Hagenauer, Jr.
W. F. Bauch, Jr. — W. B. Hampton
M. C. Condrey — J. L. Ray
L. J. Doyle — C. W. Rusby
O. M. Gunderson — K. S. Vaughan-Birch

Department No. 2
PROFESSIONAL STANDARDS & EDUCATION FOR TRAFFIC ENGINEERING
Norman Kennedy, Department Head

Scope: **To outline the curriculum of the traffic engineer's education, based on the needs of practicing traffic engineers, and to prepare the technical requirements of a traffic engineer so that they can be presented to State Professional Engineer License Boards.**

Committees:

2 A. Professional Registration.
George M. Webb, Chairman.
R. A. Burch — E. L. Mathes
R. E. Jorgensen — C. R. Waters
P. S. Mancini

2 B. Civil Service Requirements for Traffic Engineering Positions.
Donald S. Berry, Chairman
W. F. Babcock — H. H. Harrison
L. B. Cafferata — J. C. Henberger
R. E. Dunn — J. R. Leek
J. L. Foley — H. Marks
T. R. Goodman — F. A. Ronan
F. H. Green — W. J. Weller

2 C. Philosophy & Principles of Traffic Engineering.
Fred W. Hurd, Chairman
J. E. Baerwald — J. L. Chaffee
B. G. Barkan — J. A. Gallagher, Jr.
J. A. Bruce — R. F. Gross
M. E. Campbell — G. D. McDonald
C. A. Pemberton

Department No. 3
TRAFFIC CONTROL OPERATIONS
Matthew C. Sielski, Department Head

Scope: **To be concerned with standards for safe and expeditious operation of traffic control devices and methods and with warrants required to justify regulatory traffic control measures. To establish criteria or warrants for installation of traffic control signals, criteria for parking time limits, restrictions, prohibitions, loading zones; criteria for use of traffic islands; criteria for designation of through streets.**

Committees:

3 A. Policies on One-Way Streets.
Gordon K. Gravelle, Chairman
K. A. Bevins — Adrien Genest
W. C. Brandes — D. E. Morris
R. L. Cox — W. S. Smith
J. J. Feuchter — W. K. Fleming†
W. K. Fleming† — Bryan Wilson

3 B. Warrants for and Experiences with Pedestrian Intervals at Signalized Intersections.
F. Houston Wynn, Chairman
A. W. Gove — W. E. Schwanhausser, Jr.
C. McEachern — L. A. Weymouth
C. C. Robinson — J. T. White

3 C. School Crossing Protection.
Lawrence Lawton, Chairman
O. K. Anderson — LeVerne Johnson
W. H. Claire — L. D. Kies
G. E. Cogger — W. G. Klett
R. S. Deetz — R. G. Still
R. D. Dier — T. A. Wiley
D. J. Hanson — R. M. Wray
John Selzer*

3 D. Warrants for and Experiences with Yield Signs.
Herbert B. Woodling, Chairman
T. R. Buckman — D. T. Myers
R. F. Gross — P. W. Rice
J. T. Hanna — J. R. Wichman

3 E. Warrants for Speed Zones.
James E. P. Darrell, Chairman
F. L. Bell — E. E. Lewarch
J. F. Caarls — W. H. Mann
M. V. Greer — E. W. Osterhoudt
J. E. Reading

3 G. Parking Meters
Ralph Sprungman, Chairman
R. W. Borrowman — A. T. Hayes
H. R. Burton — J. C. Henberger
E. H. Flynn — F. A. Ronan
C. M. Upham, Jr.

3 H. Street and Highway Lighting.
Otto P. Ortlieb, Chairman
R. E. Dunn — J. H. Mitton
J. A. Gallagher, Jr. — H. W. Osborne
H. F. Ilgner — C. H. Rex
W. F. Kavanaugh — T. M. Vanderstempel
J. L. Wehmeyer

3 I. Truck Loading Zones.
Charles A. Goodwin, Chairman
Z. A. Faulkner — P. W. Rice
E. H. Flynn — P. S. Robinette
V. J. Musick — W. O. Shrader
J. R. Palmer — F. C. Tarbox

3 K. Warrants for Four-Way Stop Signs.
Wilbert F. Watkins, Chairman
J. F. Exnicios — W. W. Rankin
M. J. Hensley — H. B. Woodling
Burt Whedon

3 L. Warrants for Pedestrian Refuge Islands.
Martin E. Bruening, Chairman
G. W. Barton — R. F. Michel
W. R. Bellis — J. H. Mitton
D. S. Berry — H. W. Osborne
K. A. Bevins — W. N. Volk

3 M. Proper Location for Bus Stops.
Paul L. Ristroph, Chairman
H. M. Baker — M. A. Kraft
K. A. Bevins — W. H. Miller
D. J. Faustman — E. E. Olmstead
M. J. Gittens — E. M. Plettner
J. T. Hanna — C. C. Robinson
B. H. Sexton

3 N. Special Routes for Commercial Vehicles.
Herman J. Hoose, Chairman
G. J. Fisher — G. H. Herrold
W. L. Jolesch

3 O. Warrants for Off-Center Lane Movement.
Richard G. Fencl, Chairman
J. J. Dobelek — D. L. Gerlough
N. K. Dunwell — G. F. Hagenauer
C. G. Stoneburner

3 P. Traffic Studies.
William R. Marston, Chairman
J. L. Foley — O. K. Normann
H. S. Levinson — E. S. Olcott
J. K. Mladinov — M. A. Powills, Jr.
C. A. Rothrock

Department No. 4
Lloyd M. Braff, Department Head

Scope: **To deal with standards of design of any and all mechanical equipment used in connection with traffic control or to promote safety on traffic ways. To establish standards for signals, signs, markings, street and highway lighting, etc.**

Committees:

4 A. Traffic Signals.
Holden M. LeRoy, Chairman
F. C. Ashe — R. F. Michel
N. Avins — W. H. Peterson
W. D. Gottschalk — J. E. Reading
P. L. Green — R. A. Reid
K. W. Mackall — W. N. Volk
C. S. Michalski — R. H. Warr
Stephen J. Nagy*
Henry C. Pfaff*

4 B. Study of Colored Reflectorized Signs.
Arthur M. White, Chairman
L. A. Andriacchi — I. J. Mack
G. F. Baker — E. W. Osterhoudt
H. M. Esch — J. S. Saylor
R. C. Harger — G. E. Shuttleworth
A. E. Keeley — C. H. Wiley
S. J. Levine — R. A. Wilson
S. D. Coleman* — T. B. McCarthy*
G. F. Harkins* — D. A. Reese, Jr.*
W. M. Schoenfeldt*

† Denotes ITE member requested as committee member by Sustaining Organization.

* Denotes non-voting committee member (see Art. XI, Section 3 of By-Laws).

4 C. Sign Illumination Techniques.
James S. Saylor, Chairman
H. A. Breeding — W. F. Milner
J. Al Head — W. E. Schwanhausser, Jr.
A. L. Hutchison — R. I. Strickland
V. P. Johnson — J. W. Zimmerman
Glenn W. Johnson*

4 D. Paint and Bead Specifications.
Ellis L. Mathes, Chairman
D. A. Branigan — W. H. Klapproth
H. G. Eckhardt — R. L. McVoy
A. C. Gibson — R. G. Still
A. E. Keeley† — A. L. Stewart

4 F. Design of Signs and Markings.
Fenton G. Jordan, Jr., Chairman
D. A. Branigan — R. H. Kanak
T. R. Buckman — E. A. Mohr
J. A. Carrothers — P. D. Muffley
B. R. Culver — C. W. Prisk
G. W. Howie — G. E. Shuttleworth
J. F. Brady* — J. O. Gehrett*
H. N. Carver* — W. Burke Smith*
W. H. Spurgeon*

4 G. Traffic Survey Devices.
John L. Barker, Chairman
W. W. Davis — D. L. Gerlough
C. E. Haley
Non-Member Advisor:
R. C. Hopkins (Bureau of Public Roads)

Department No. 5
PLANNING & GEOMETRIC DESIGN OF TRAFFIC & PEDESTRIAN WAYS
Alger F. Malo, Department Head

Scope: **To establish standards for geometric design of vehicular traffic ways and pedestrian ways on the basis of traffic needs; to establish criteria for widths of streets, intersection treatments, principles of channelization, etc.**

Committees:

5 A. Design Criteria for Urban Expressways.
John J. Dobelek, Chairman
H. Mike Flanakin, Secretary
B. G. Barkan — L. W. Gardner
H. G. Bauerle — M. A. Kaehrle
M. A. Bebee — R. H. Kanak
D. F. Dabney — H. J. Leonard
G. H. Frieling† — D. W. Loutzenheiser
C. E. Fritts — M. R. Mitchell
O. H. Fritzsche — W. S. Quimby
M. M. Rich

5 B. Channelization Designs.
Eugene Maier, Chairman
W. L. Braun — Guy Kelcey
J. W. Chambliss — R. G. Mitchell
G. A. Crawford — E. S. Olcott
D. F. Dabney — R. H. Oliver
Adrien Genest — Harry Parker
L. E. George — H. C. Peck
B. A. Switzer

5 C. Uphill Traffic Lanes.
Allan R. Pepper, Chairman
Robert J. Allen, Secretary
F. B. Crandall — W. H. Mann
H. H. Harrison — J. P. Mills, Jr.
F. T. Maloney — F. C. Tarbox

5 D. Medians in Urban Areas.
Wesley R. Bellis, Chairman
W. F. Babcock — Adrien Genest
R. W. Borrowman — R. N. Grunow
G. R. Cysewski — J. T. Hanna
D. F. Dabney — J. R. Leek
W. E. Ducker — W. H. Miller
N. K. Dunwell — W. H. Voltz
A. G. Fisch — M. H. West

5 E. Driveways or Curb Cut Permits & Design.
Ralph B. Luckenbach, Chairman
S. E. Bergsman — W. E. Ducker
B. H. Bowman — J. E. Johnston
C. E. Chenoweth — R. K. McGillivray
E. J. Clifford — H. W. Osborne
J. S. Saylor

5 F. Design of Safety Curb & Center Line Devices.
Edwin F. Clark, Chairman
W. R. Bellis — E. F. Gervais
C. C. Clark — C. G. Stoneburner
A. G. Fisch — C. R. Waters

† Denotes ITE member requested as committee member by Sustaining Organization.

Department No. 6
PLANNING & GEOMETRIC DESIGN OF TERMINAL FACILITIES
Edmund R. Ricker, Department Head

Scope: **To determine factors for the geometric design of auto, truck and bus terminal facilities based on vehicle characteristics and traffic characteristics of the surrounding street system.**

Committees:

6 A. Design Standards of Parking Garages.
Robert H. Burrage, Chairman
Adolph Bahn, Jr. — T. J. Fratar
E. A. Barton — A. H. Rogers
H. M. Batts, Jr. — E. G. Wetzel

6 B. Design of Truck Terminals.
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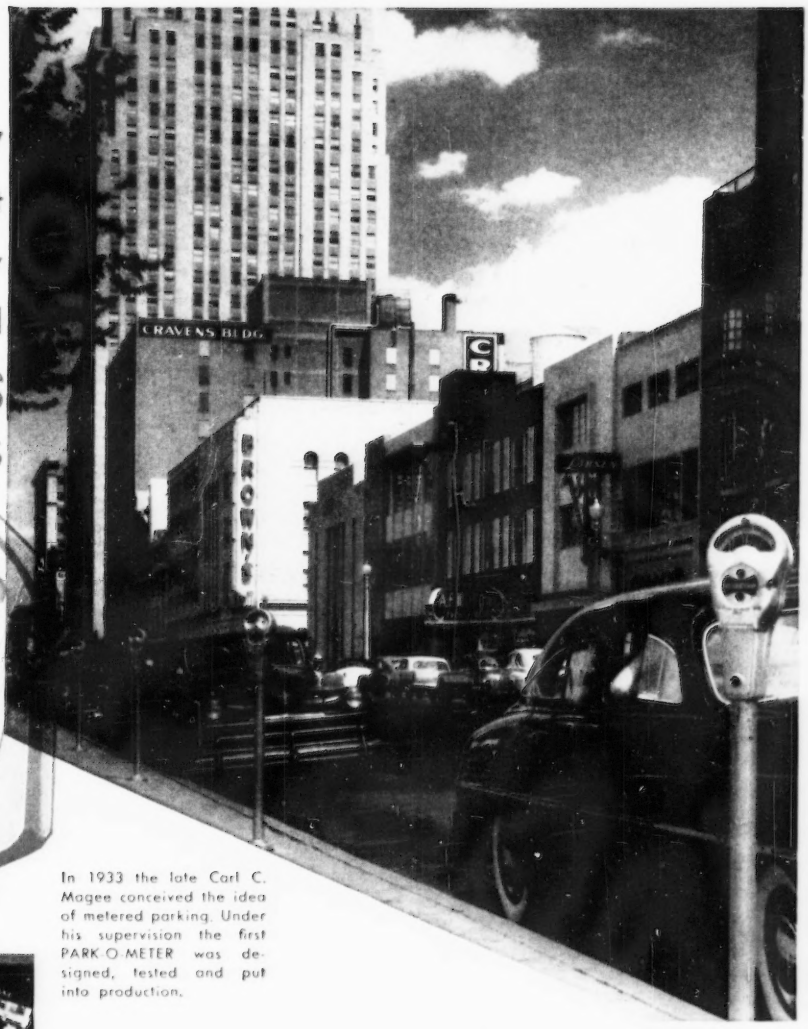

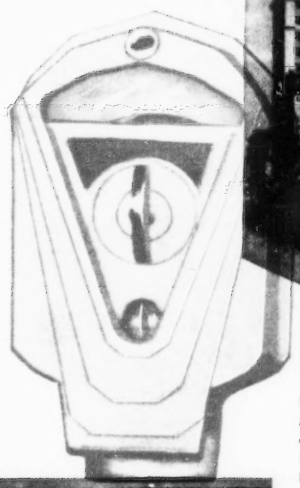

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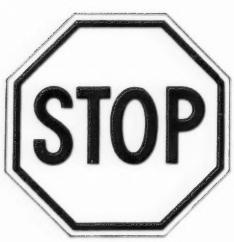

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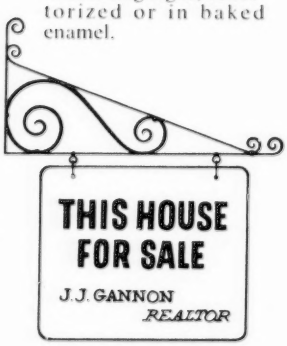

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Bruno Dentino	Associate to Member
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Robert E. Barkley	Junior to Associate
Edwin F. Colby	Junior to Associate
John C. Henberger	Junior to Associate
Marble J. Hensley	Junior to Associate
George A. Hill	Junior to Associate
John R. Leek	Junior to Associate
John K. Mladinov	Junior to Associate
J. Gordon Prather	Junior to Associate
Carlton C. Robinson	Junior to Associate
Burton H. Sexton	Junior to Associate

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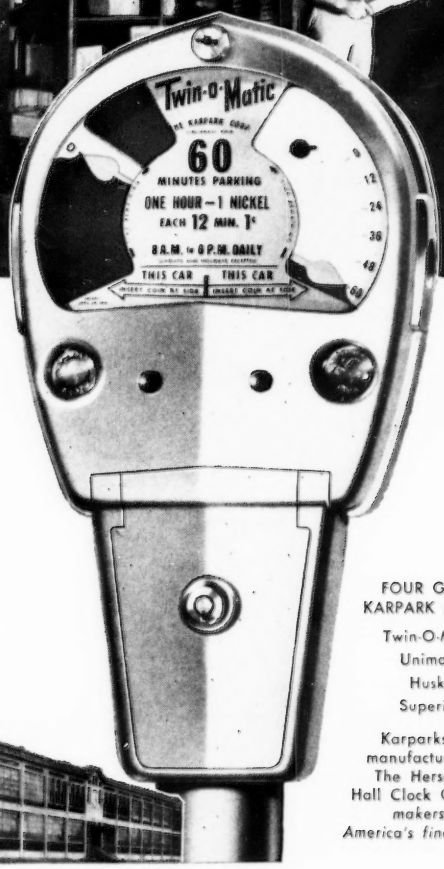

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